PM

PLACEMAKER

Autobahn Inhabited Bridges
on the Berlin Stadtring A100

Prof. Boštjan Vuga

ADIP Magazine 3.3

Contents

Editorial

Boštjan Vuga

PLACEMAKER is the third in a series of four PLACE studios conducted at ADIP – the Architecture Design Innovation Program at the TU Berlin.
The PLACEHOLDER studio (winter 2011) was the first of the series. It studied temporary pavilions and their potential to become testing grounds for social interaction. Thirteen pavilions were designed on thirteen future construction sites throughout Berlin. The pavilions anticipated the program of the to-be-built buildings and through architectural design suggested alternative experiences to the building's conventional use. The result was an interconnected ensemble of typologically new public spaces and experiences.

The following PLACE-ACTIVATOR studio (summer 2012) sought an arrangement of individual architectural interventions with public and internal hybrid programs within a derelict area. Both program and architectural design of the interventions aimed to create attractions in order to revitalize the urban area. In this case seven completely interspersed buildings were designed to revitalize the run-down port of Trieste. Each worked individually to restructure the immediate surroundings while working together to revitalize the entire urban fabric by connecting the port with the city. The studio concluded with urban speculations, which were defined by their intervention's strength to become a catalyst of urban development.

This semester's PLACEMAKER studio (winter 2012) investigated non-places – places of transience that do not hold enough significance to be regarded as places.[1] An architectural object that is placed into a non-place environment must have the ability to create a field of transition and subsequently become an actual destination. Its architectural design and its hybrid-public as well as internal program must be become an attraction in order for the original non-place to become a new place.

Stadtautobahn A100

The non-place environment of investigation for this studio was Berlin's intercity highway - the A100 Stadtautobahn. The students developed a project on one of four pre-selected sites along the A100. The aim was to reconnect the area that the A100 had at some point separated. The four sites were selected based on the diversity of their context and the evident discontinuation of the city fabric inflicted by the highway.

PM01 lies on a stretch of the Stadtautobahn that runs along the Westhafen Canal, disconnecting its waterfront from the nearby residential area. PM02 is loacated on the cloverleaf shaped crossing where the Stadtautobahn intersects with the A103 highway. The crossing's typology and valley-like topography create a large amount of unusable left-over space in the area. PM03 sits on a tangent to Berlin's popular Tempelhofer Feld. The A100 separates the park from an adjacent industrial and residential area. PM04 is a fictional location on the planned extension of the Stadtautobahn. While advocated as an economical development of the city, it has come under scrutiny by the population in recent years.

Autobahn Inhabited Bridges

In the studio architectural objects of design were referred to as AIBs – Autobahn Inhabited Bridges. The goal was to design them with hybrid functions in order for them to become catalysts of urban development within their surrounding. Their placement above the highway allows for additional use of mundane infrastructure, which if not used for transportation purposes does little more than occupy urban space.
The proposed AIBs are case studies on how to intensify and densify areas of Berlin where the urban fabric is vast and underdeveloped. Different than congested and dense cities like London, Paris or Tokyo, these AIBs react specifically to Berlin's vast urban fabric. They are neuralgic nodes that activate required tensions in development with their hybrid program and trigger a high level of entropy in low-end energy areas of Berlin.

Case Studies

The studio began with a research of case studies on inhabited bridges from the mid-60's until today. These structures occupy a middle ground between architecture and town planning. Their development through time was analysed and re-evaluated. What role do they play in the modern world? How did these multipurpose structures adapt to different environmental conditions and zeitgeists? To what extent are they inclusive or exclusive? Are their borders soft or hard? Are they porous? In what way are they sustainable? Moreover, do these structures rather upgrade or negate their context?

The common denominator of all studied cases lies in their ability to bridge infrastructure like a river or a road with an additional function.

Boštjan Vuga, born 1966 in Nova Gorica, Slovenia, studied at the Faculty of Architecture in Ljubljana and continued his post graduate studies at the Architectural Association School of Architecture in London. In 1996 he and Jurij Sadar cofounded the architectural office SADAR+VUGA in Ljubljana. Currently he is the guest professor at ADIP at the TU Berlin.

For example, bridges like the Ponte Vecchio are used for shopping while the Autogrill stops along the highway are used for eating and resting. Their additional program allows these bridges to become actual destinations and not merely points of connection. They are essential elements of architectural design and spatial planning. In addition, their significance calls for a careful balance between architectural and structural design.

Generators of Change

The studio's results are presented in this publication. They show that it is reasonable to consider the integration of road infrastructure with architectural structures without fetishizing, negotiating or excluding the urban environment. The time may be right to start including highways and their surrounding into the idea of a sustainable environment. The fast and constant digitalization of the urban environment as well as the reduced use of cars, may allow the Stadtring to one day become a city boulevard that runs through the Berlin. Autobahn Inhabited Bridges can be generators of change for the Autobahn. They can become hubs of urban development in Berlin.

Chapters

The seminar was organized in 5 consecutive chapters that represent a conducted approach to defining a project brief and design based on that brief.

1. MAPPING: definition and mapping of the micro-location.

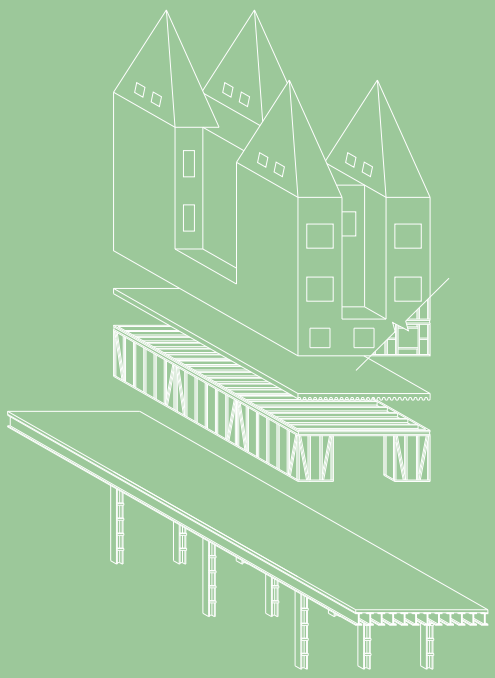
2. PROJECT BRIEF: definition of the program, activities and users.

3. POROSITY: as a design tool for the development of spatial prototypes. A shift from the abstract to the concrete occurs here: spatial prototype is developed in relation to the project brief.

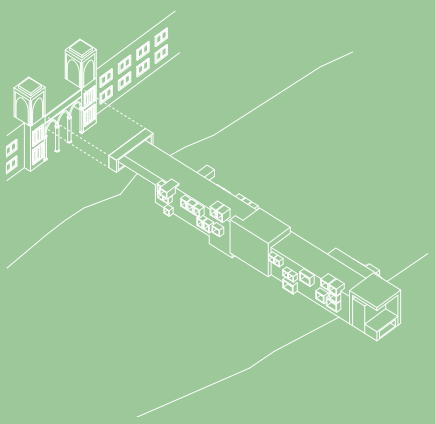
4. PROTOTYPE: testing of the prototype at the AIB microlocation and modification of the prototype regarding the program and activity of the AIB. It is a start of the design process. Now the first AIB structural model is created.

5. DESIGN: design development with a constant reassessment of the prototype. AIB design is finished with a graphical presentation and textual report that includes an urban speculation, i.e. impact of the AIB in its surroundings.

Inhabited Bridges: Case Studies

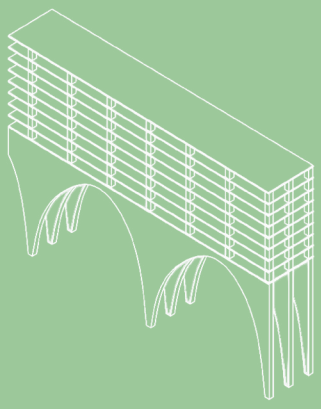


Bridge of Houses
StevenHoll
New York City, NY

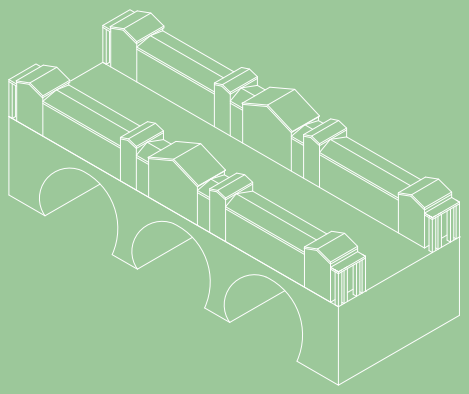


National Library
GGAF
Florence, Italy

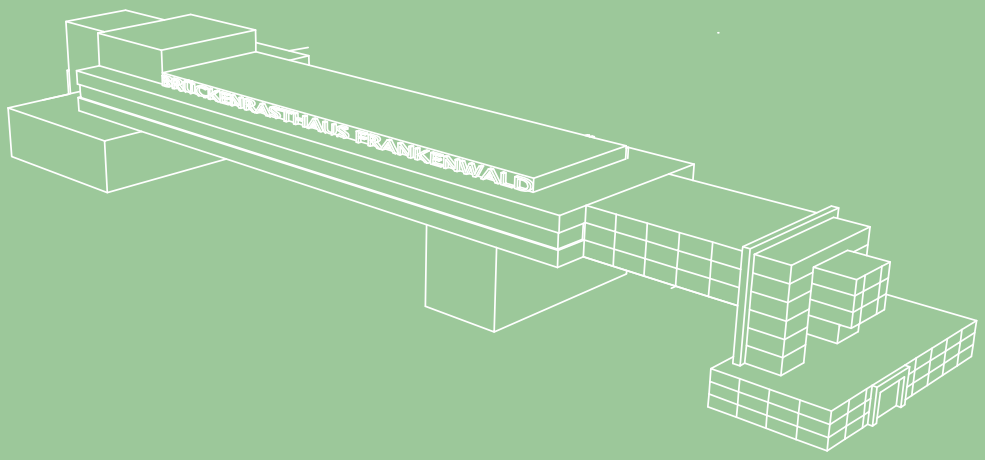
Butchers Bridge
Sadar+Vuga
Ljubljana, Slovenia



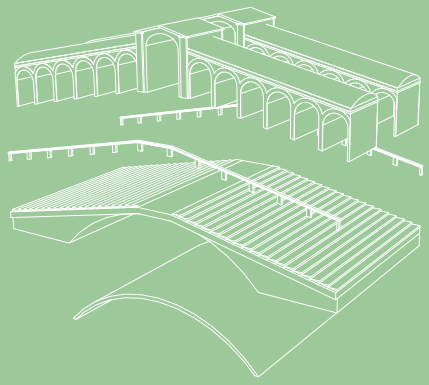
Project for Algiers
Le Corbusier
Algiers, Algeria



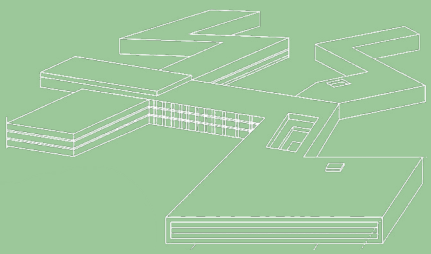
Puteney Bridge
Robert Adam
Bath, UK



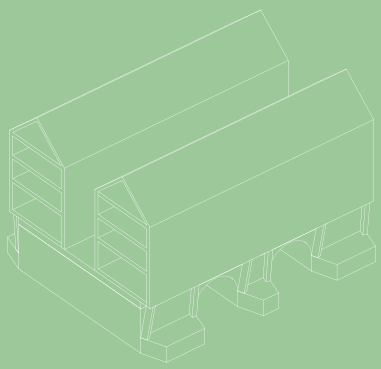
'My Stop' Roadhouse
Hotz Partner AG
Affoltern, Switzerland



Rialto Bridge
Nicolò Barattieri
Venice, Italy



Brückenrasthaus
Albert & Michael Vogler
Frankenwald, Germany



Krämerbrücke
City of Erfurt
Erfurt, Germany

Living Bridge
Chetwoods Architects
London, UK

A 100: From Highway to Highstreet

Andreas Ruby

The Highway is usually considered as the antithesis of the city: a vector of speed connecting spaces without being a space in its own right. The high street, by contrast, is considered to be the artery of the city: a vector of activity providing the neighborhood it traverses with urban amenities of all kinds. In Berlin, this opposition could melt away – the highway could actually become a highstreet one day.

Berliner Stadtautobahn

Started in 1958 and built mostly during the period of the cold war, the A 100 was always a Dadaistic version of an Autobahn. Due to the construction of the Berlin Wall it was largely cut off the German Highway network and could never be completed in its original sense as a Ringautobahn – it never made it beyond three quarters of a circle. Completely surrounded by the Berlin Wall, Berlin's Stadtautobahn is an intrinsic element of Berlin's urban infrastructure, as opposed to the rest of Germany where highways circumscribe the footprint of cities as 'the other' of the city, but don't really interfere with it.

As a result, you really feel connected to the city if you drive on A 100. In Charlottenburg you see the backs of urban blocks cut away to make way for it. Driving northbound to Wedding, your car is gently lifted on a viaduct and offers you scenic vistas of Berlin's harbor and industrial areas. Driving down southwest, you are even temporarily swallowed by a 400-meter long housing complex at Schlangenbader Straße, a friendly monster burying the higway in a linear mountain of terraced flats that takes away noise of traffic from the entire neighborhood. Cruising further on past Steglitz, the „Bierpinsel" emerges at the side of the highway, a small yet powerful tower originally housing a highway restaurant with a view. Mostly abandoned today, it blatantly exposes the unused urban potential of A 100 as an urban interface between traffic and city, movement and stasis.

If you drive along the highways in the Netherlands and Belgium, you start to get an idea of this potential. There, highways are often dotted with office buildings, industrial showrooms or production buildings placed perpendicularly to the road. Their facades are exuberantly oriented to the passing parade of cars and frame the space of traffic with a programmed wall of activities. German Highways, by contrast, are usually framed by noise-protection-walls when

Andreas Ruby, born 1966 in Dresden, studied History of Art at the University of Cologne before undertaking post-graduate studies in Theory and History of Architecture at the Ecole Spéciale d'Architecture Paris and Columbia University. Together with Ilka Ruby he is partner in textbild, an office for architectural communication. In 2008 they founded Ruby Press.

they cross urban territory, and hence give you the feeling of a no-man's land, similar to the one in between the two walls of Berlin's wall before 1989.

Highway of the Future

With the impending transition from fossil-driven cars to electric and hydrogen-powered vehicles, the seemingly innate connection between traffic and noise is however bound to dissolve. The highway of the future will be engulfed in a softly humming sound, the ambient music of our new urban mobility. Then it will no longer appear absurd or cynical to absorb the highway into the territory of the city by adding buildings next to, above and beneath it.

The studio conducted by Bostjan Vuga at TU Berlin dares to peek into this near future, challenging the city to discover potential where it now sees only problems. The studio invites us to finally leap across the postmodern disenchantment with the visionary spirit of modernism and the complacent recital of its failures. To fail is only a transitory moment on the way to achieve something. This studio reminds us that the urbanization of Berlin's Stadtautobahn has only just begun.


BIZON-D.S.
WROCŁAW


Allianz
Beermannstraße
Gas • Wasser • Heizung

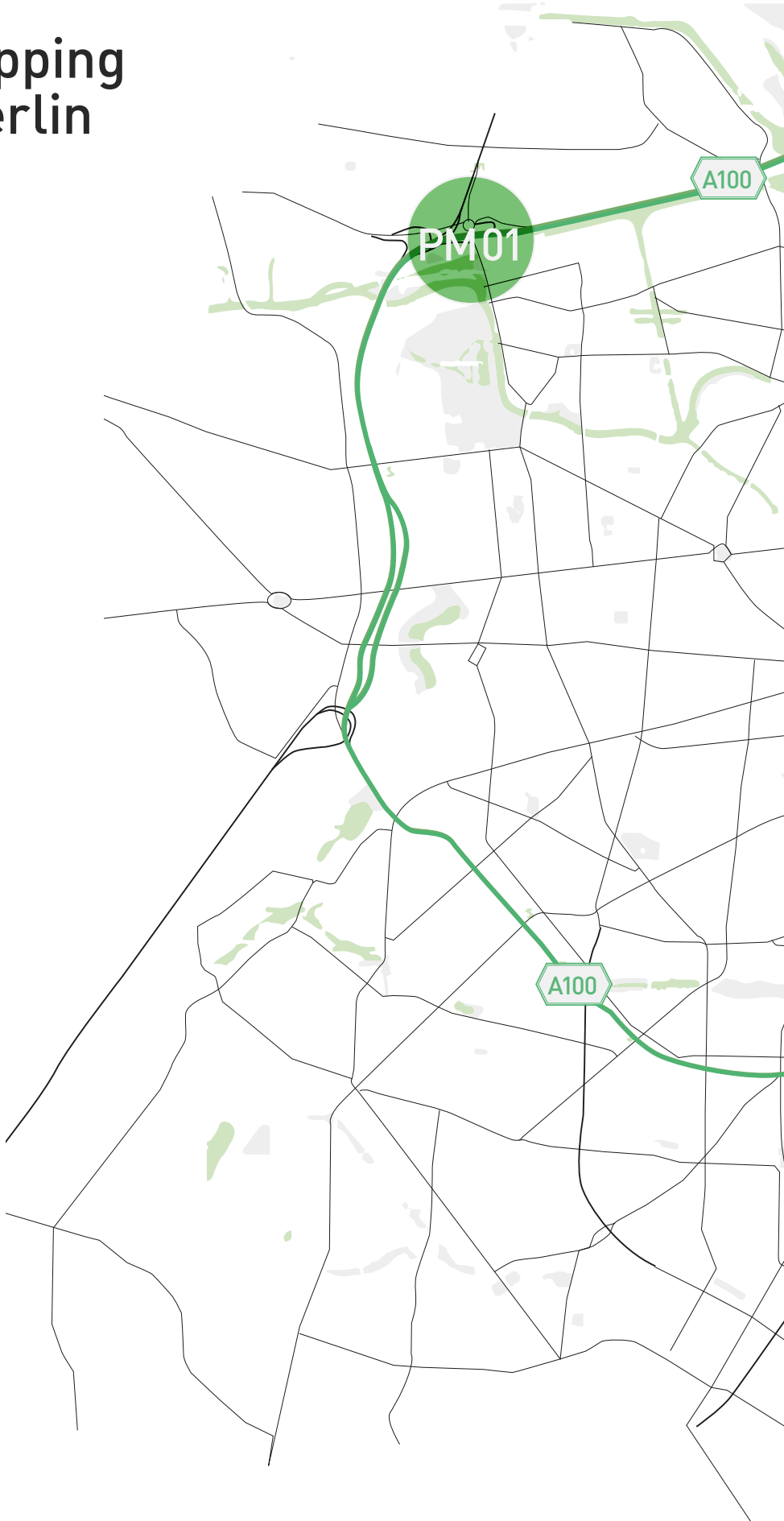
Site Mapping A100 Berlin

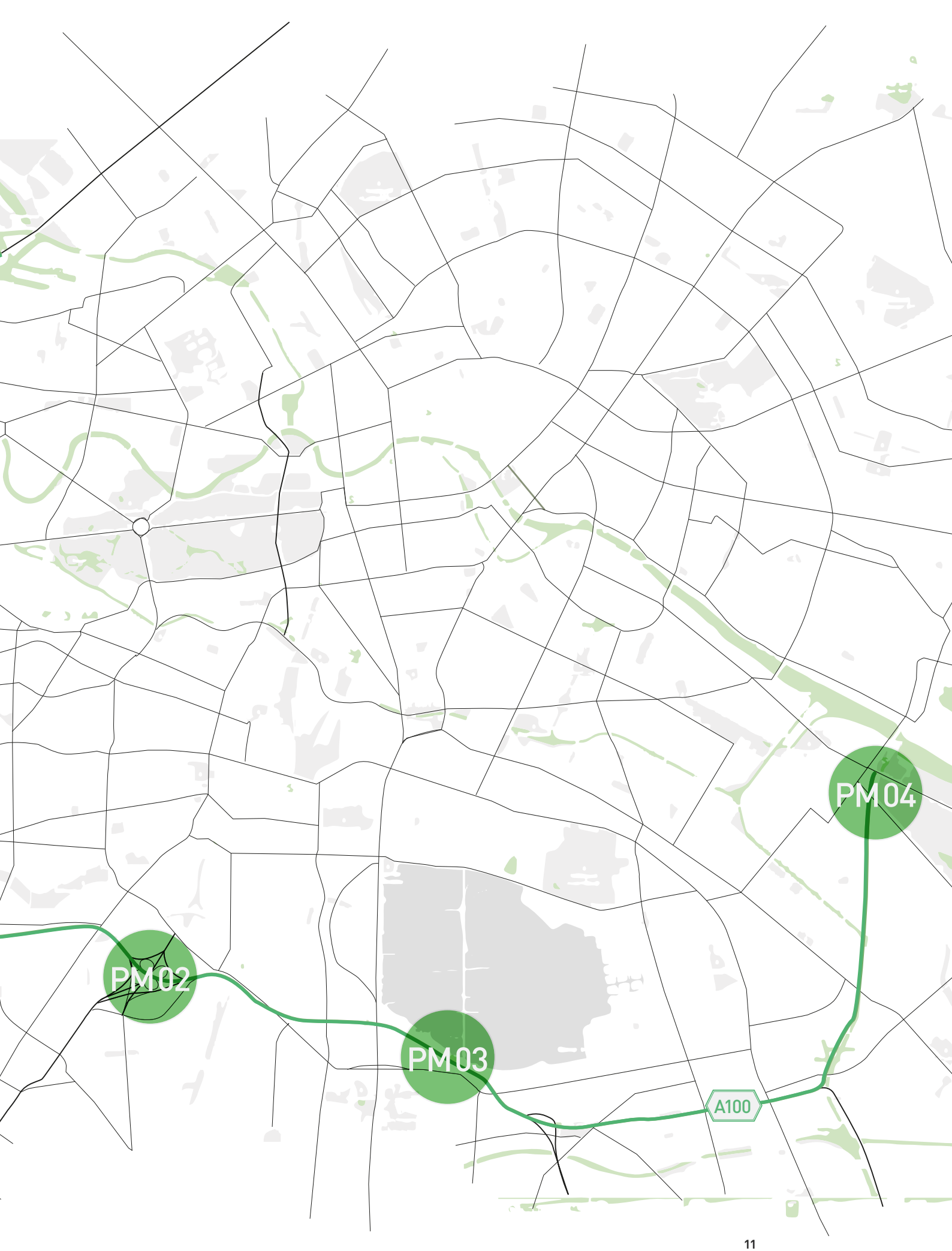
PM 01
Jakob-Kaiser-Platz
A _ Per Pedes
B _ Student Hub

PM 02
Kreuz Schöneberg
A _ Highway Origami
B _ Diatom

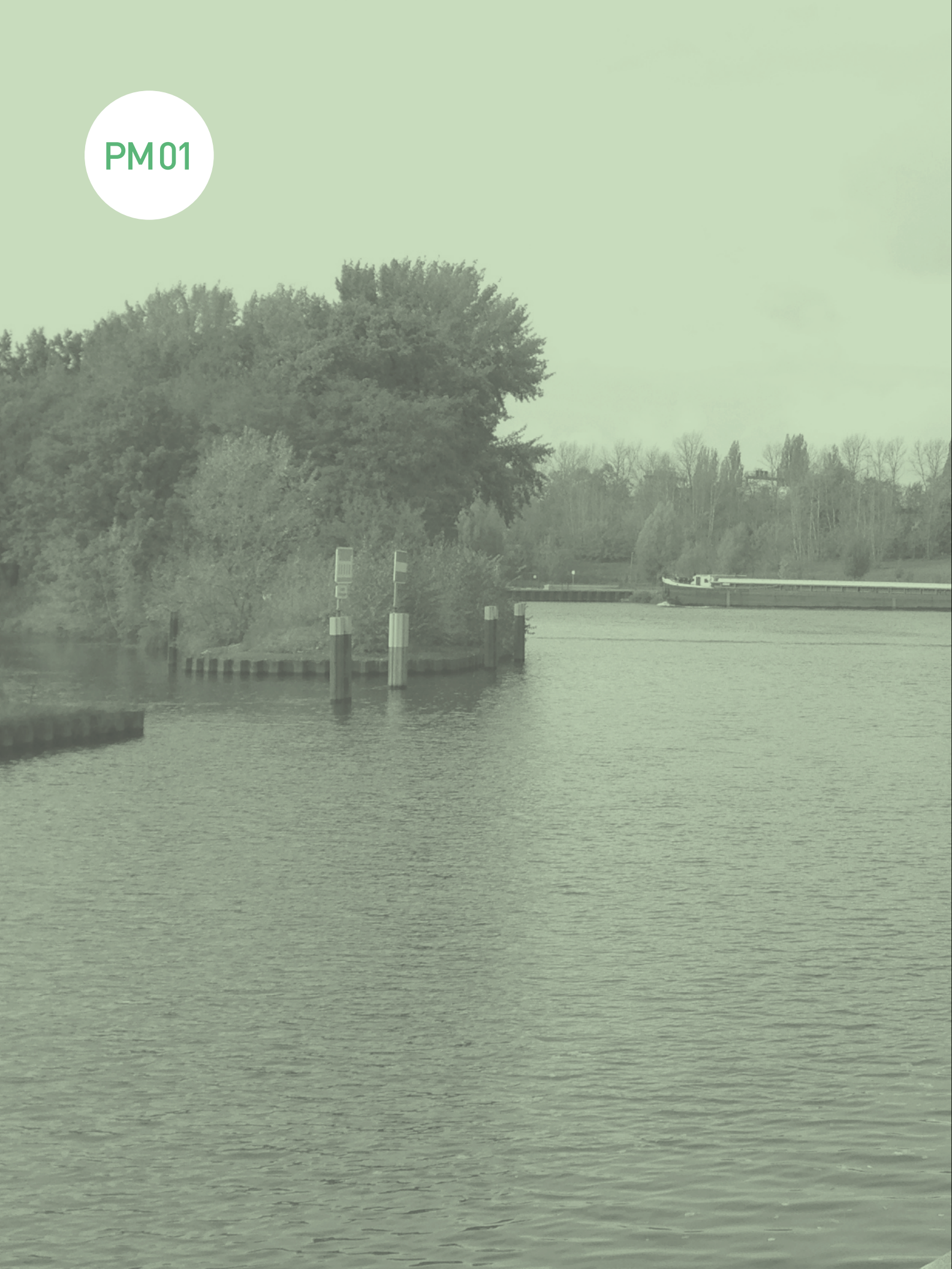
PM 03
Tempelhofer Feld
A _ Framed
B _ Connecting Prison

PM 04
A100-Verlängerung
A _ Incinerator
B _ Tesla Center




PM04
PM02
PM03
A100

PM01



Per Pedes

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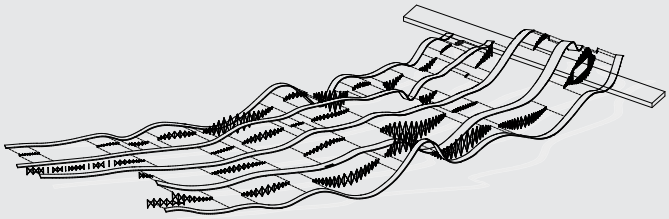
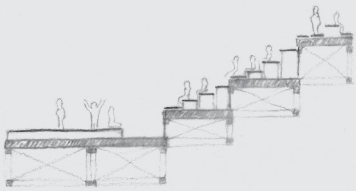
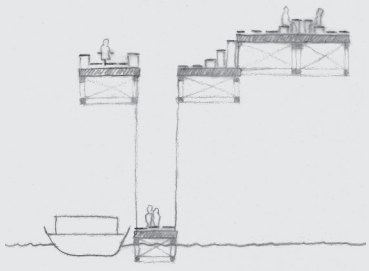
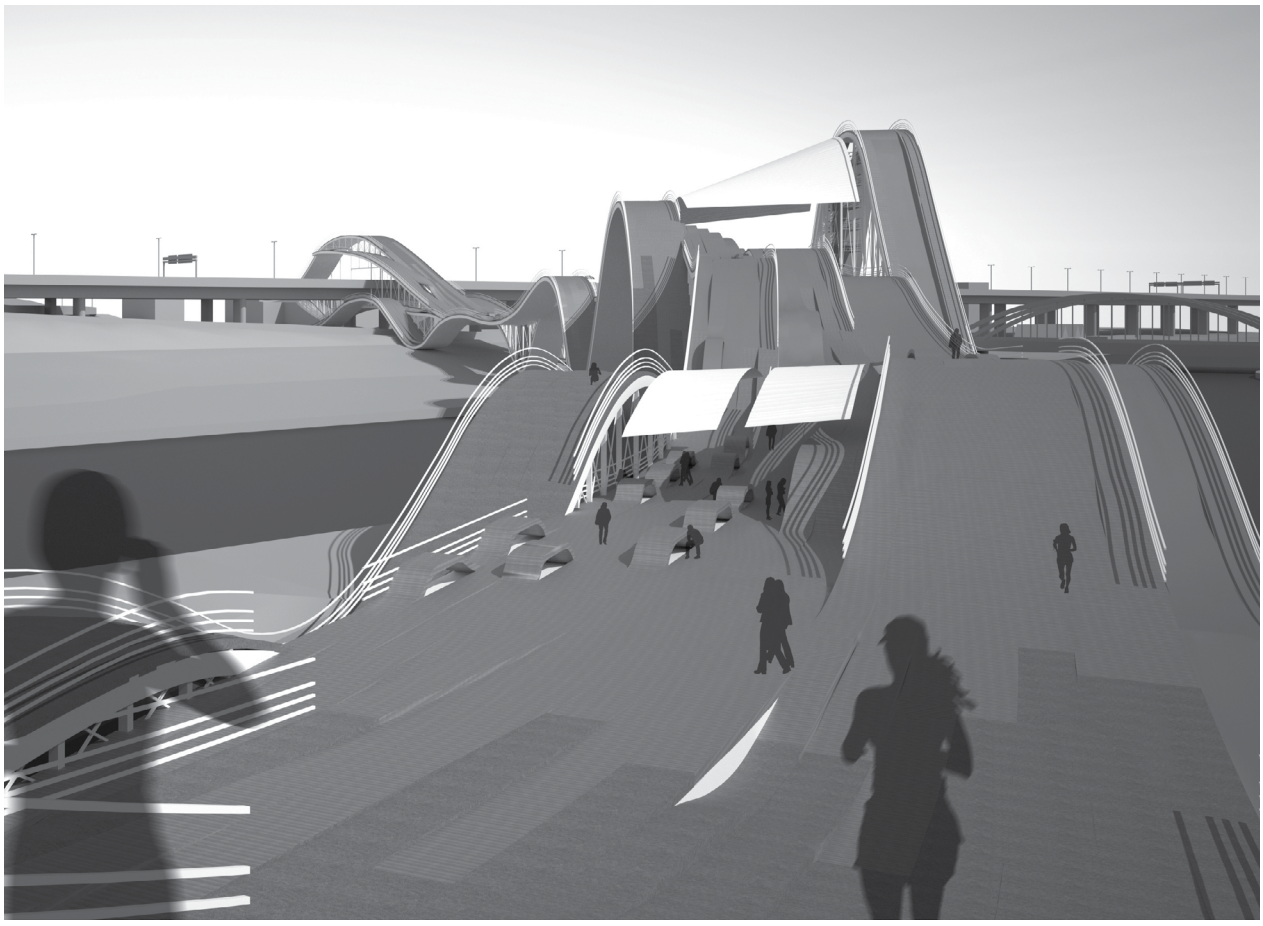
Lilyana Guncheva
Andreas Kunert



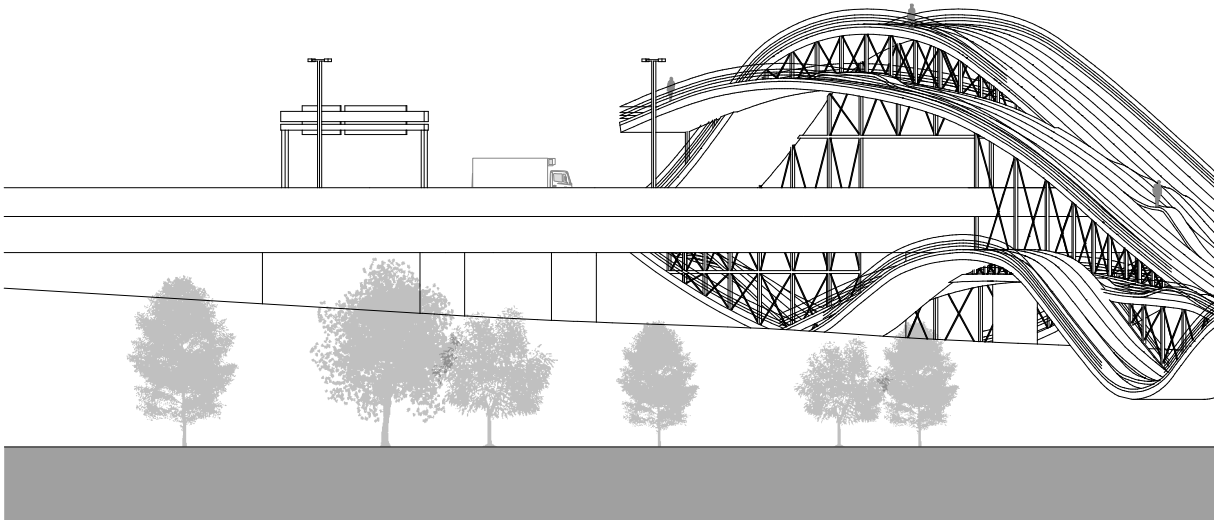
The PLACEMAKER celebrates the act and joy of walking, as a counterpart to the motorized movement on the A100. The "pedestrian highway" imitates the Autobahn in its vocabulary but transforms it into the medium of the human body. With its reinterpretation and consequent visual as well as programmatic contrast, it draws attention to the highway's qualities. The landscape bridge makes use of an abandoned water gate on one end and embraces the city highway viaduct on the other while spanning a long public landscape of outdoor activities in-between. Structurally, the bridge is composed of two continuous beams that function as cantilever bridges. The beams form the primary structure, which entirely carry the secondary structure. The bending operation enhances the thin dimensioning of the structure.

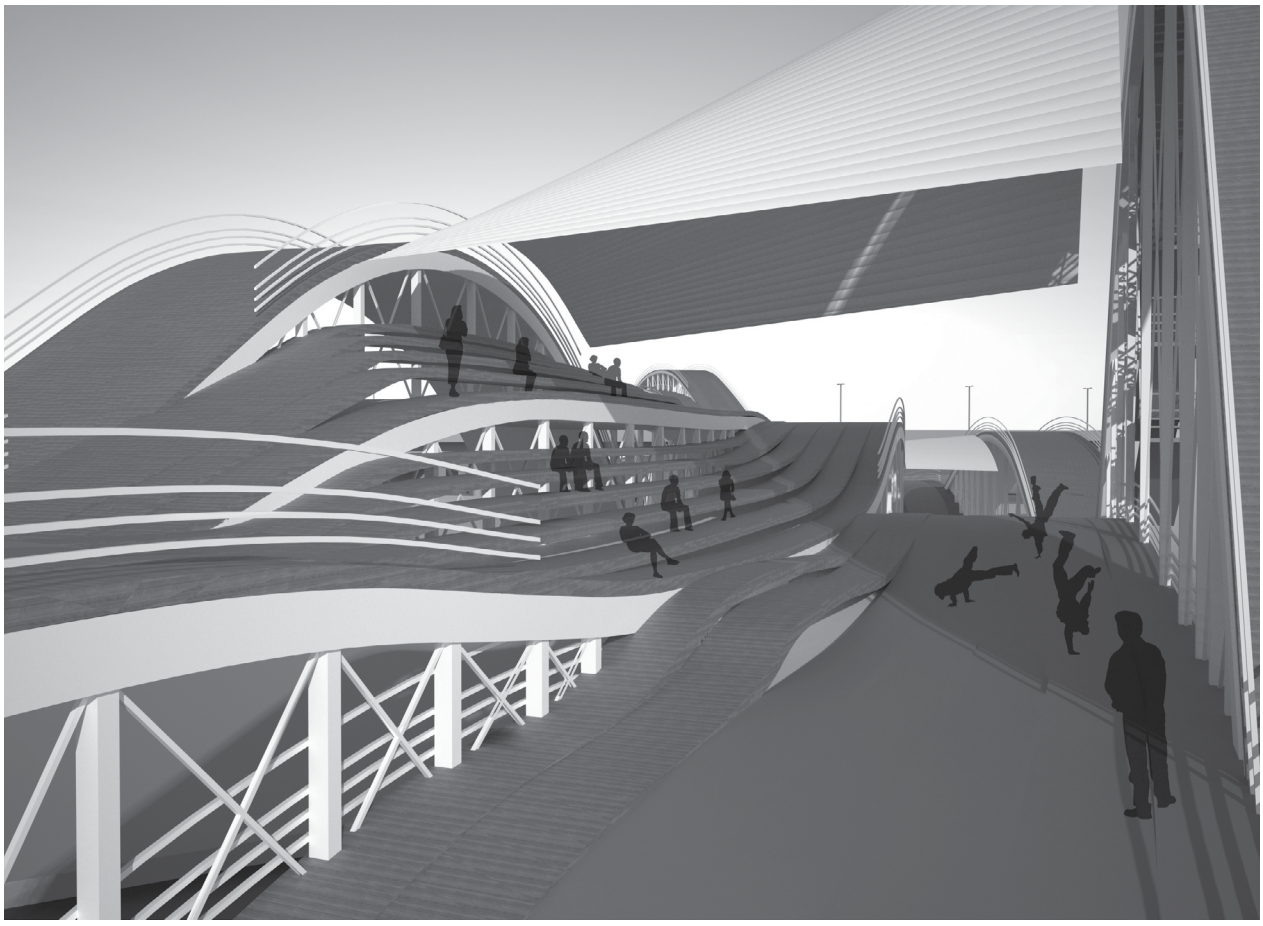




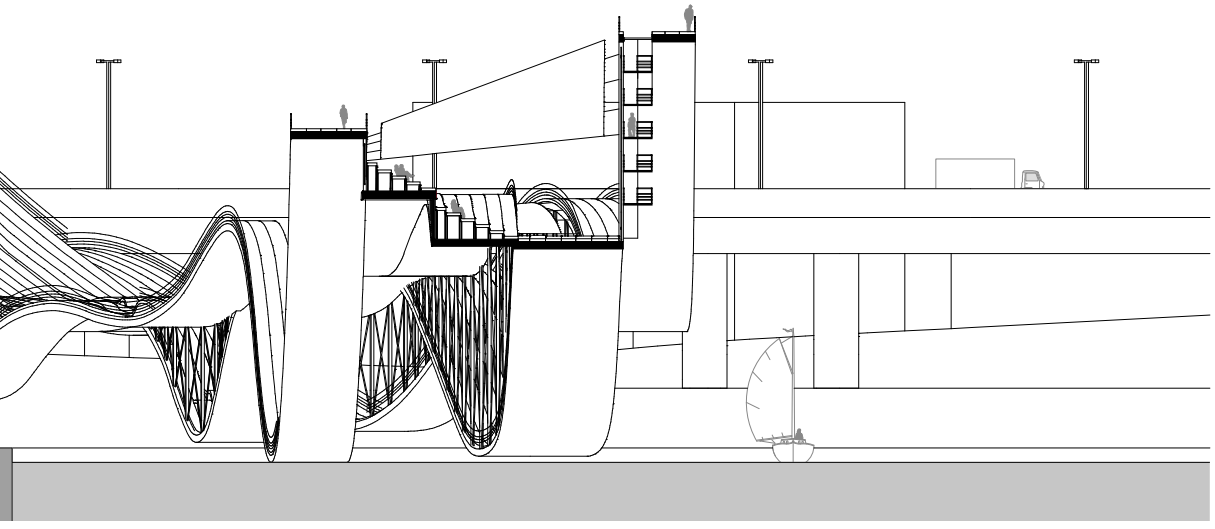


Rooftop Promenade

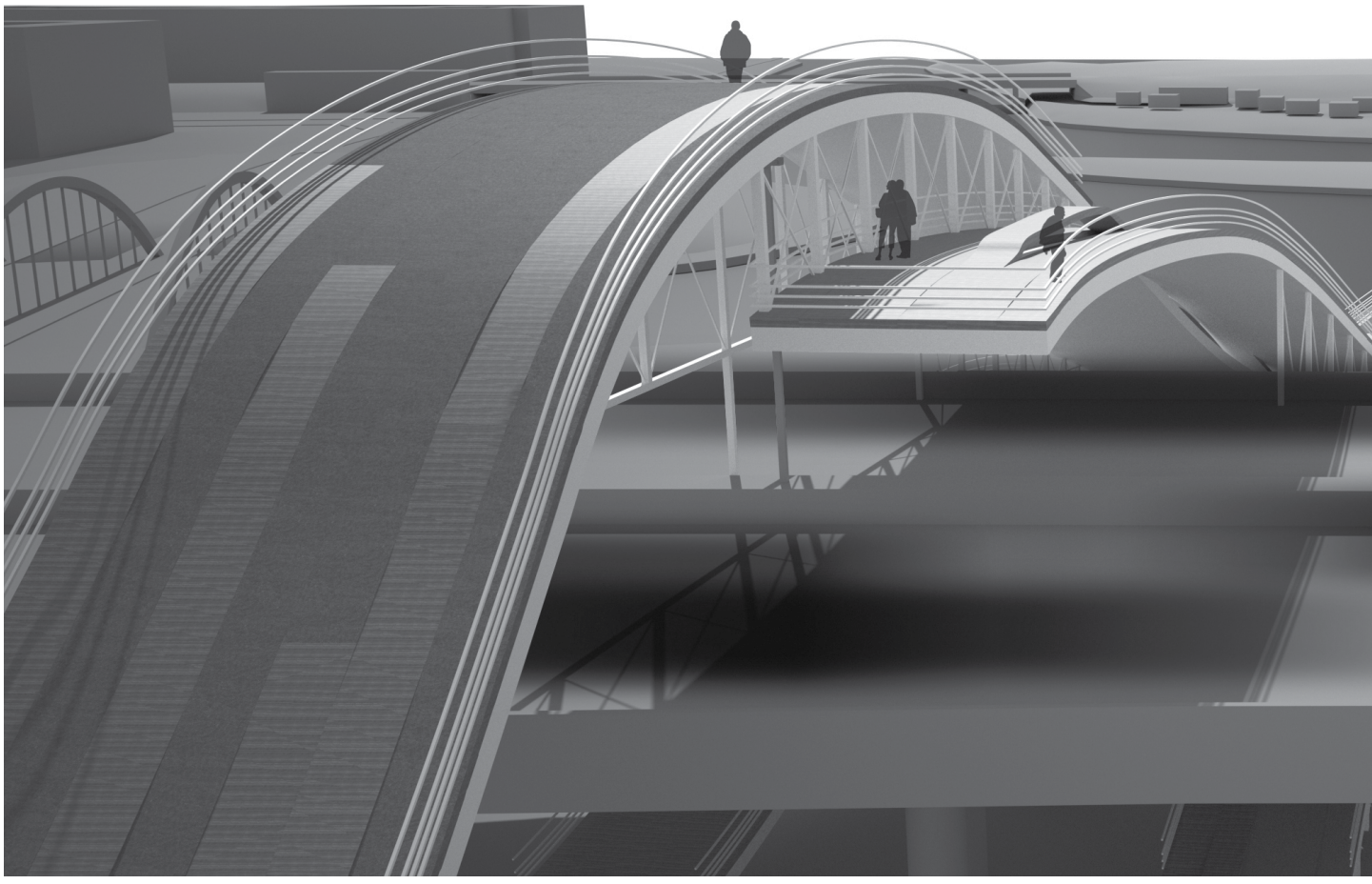


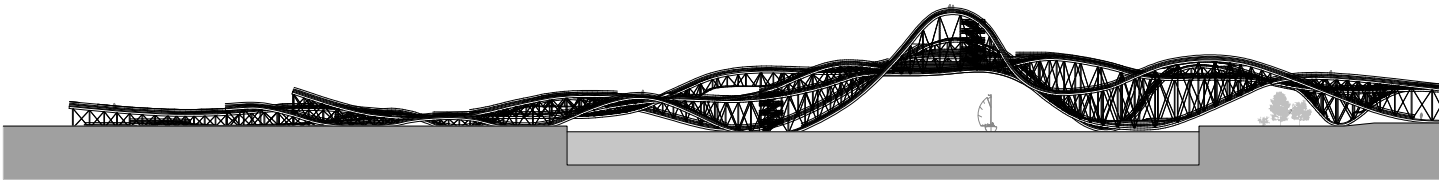


Open-Air Theater

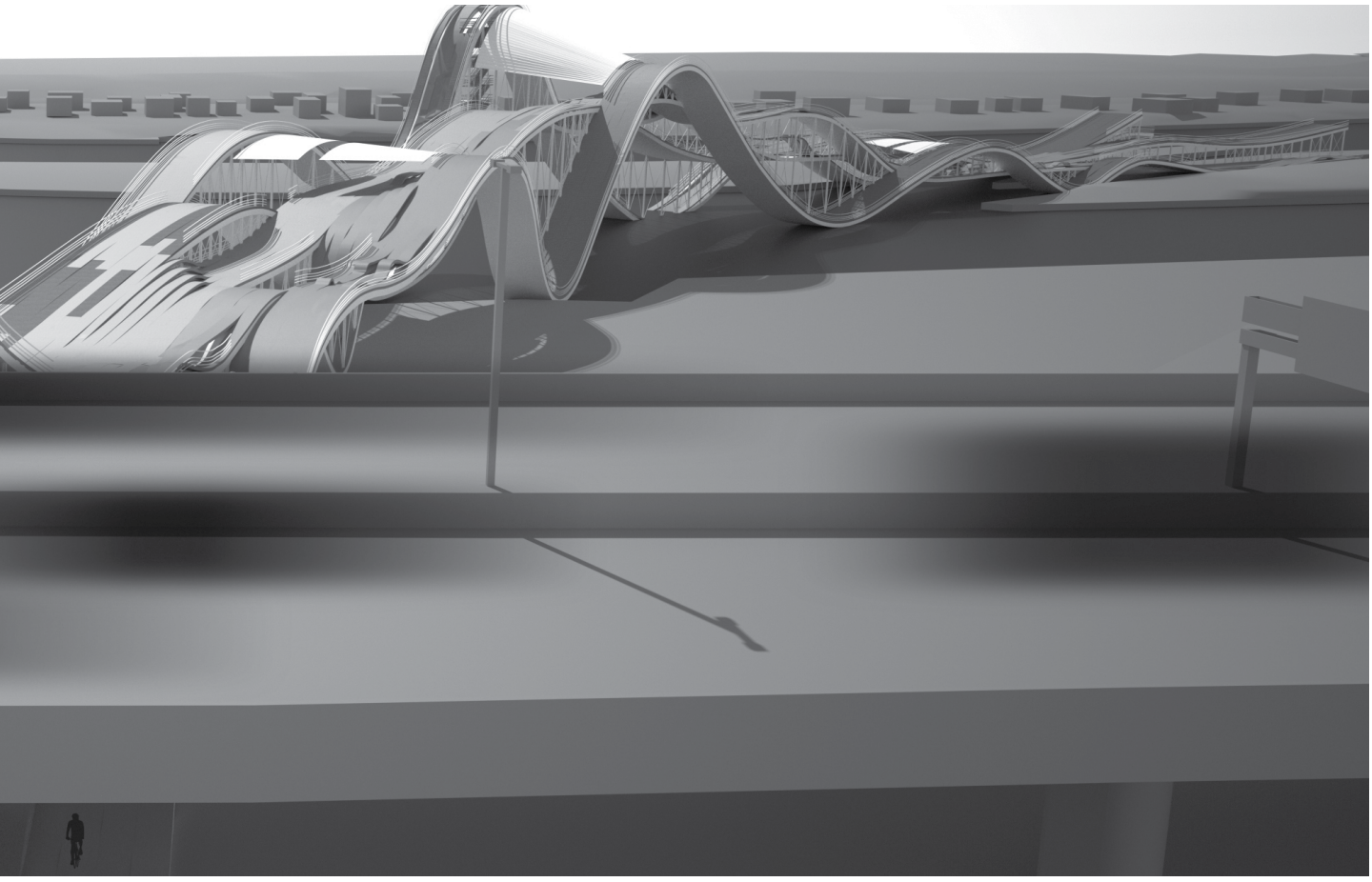


Cross section

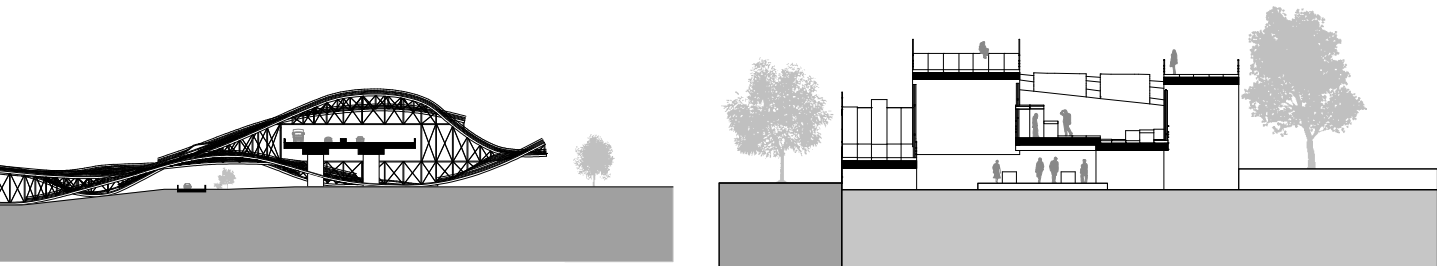




Longitudinal section

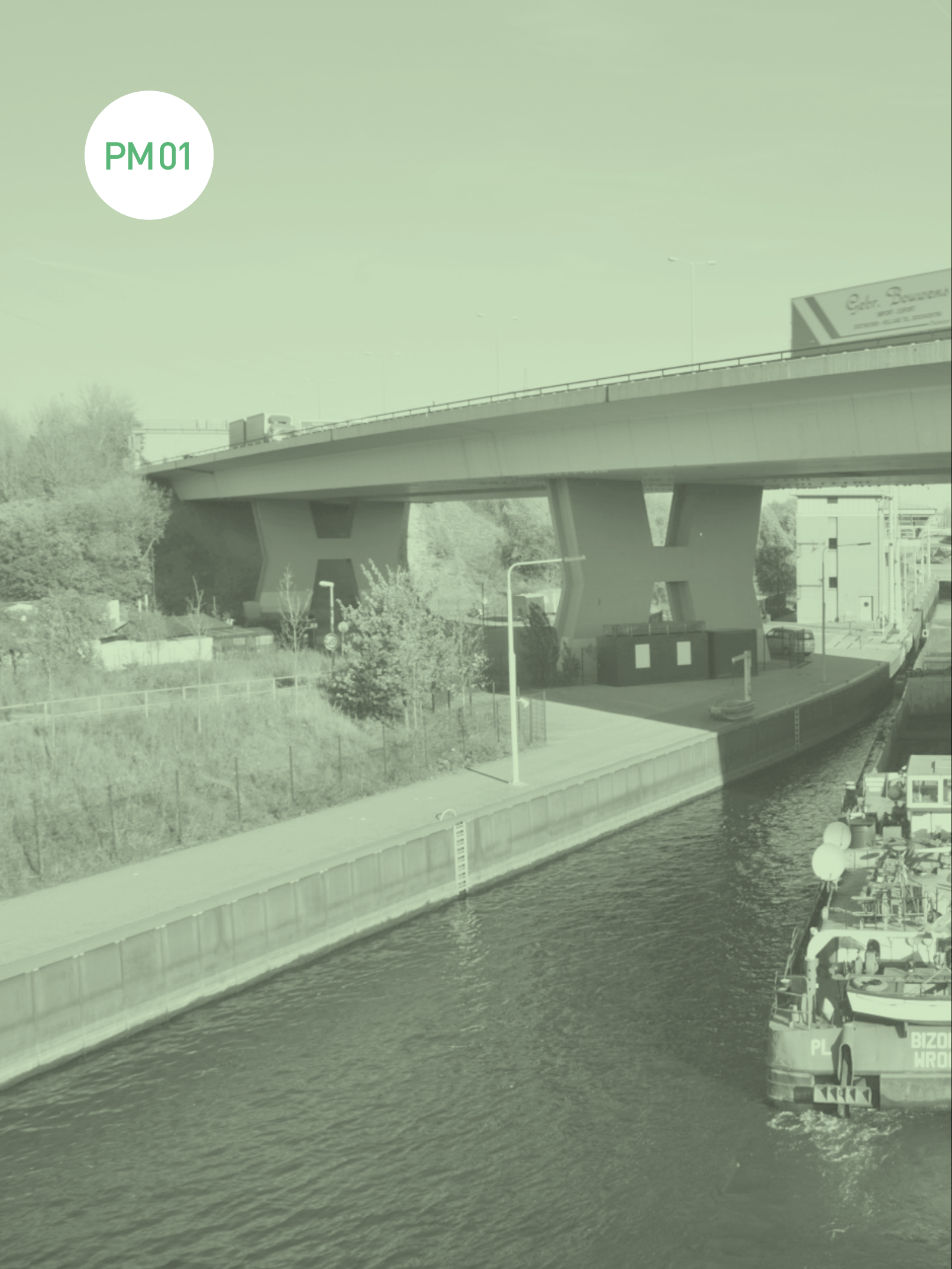


Pedestrian highway



Cross section

PM01



Student Hub

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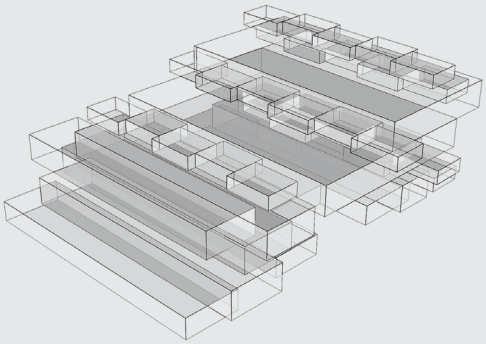
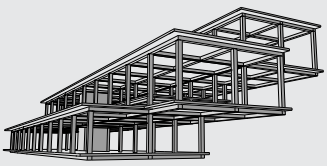
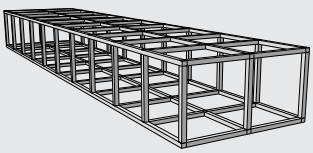
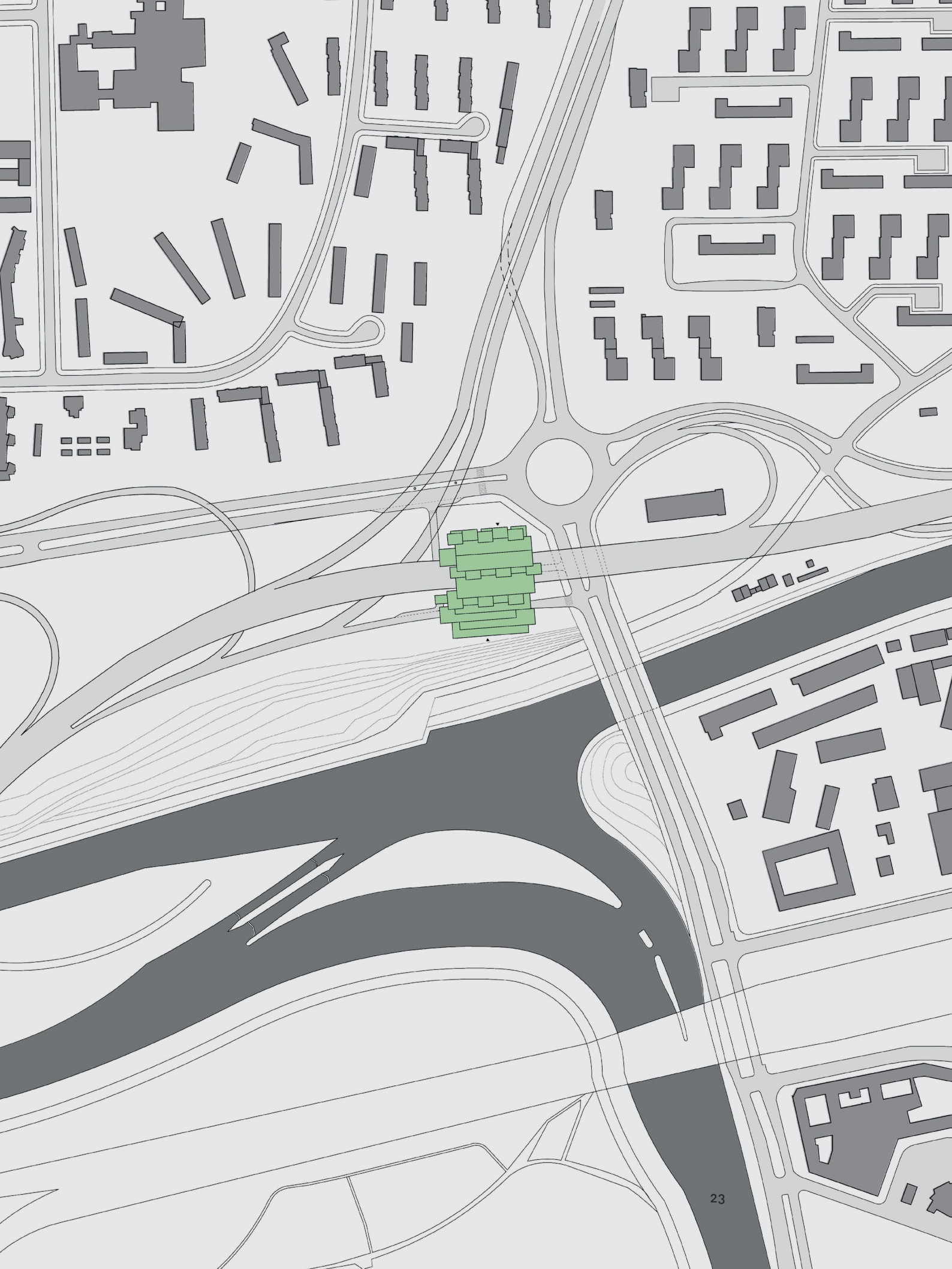
Joanna Kurczab
Olga Gordaschnik
Lale Simsek

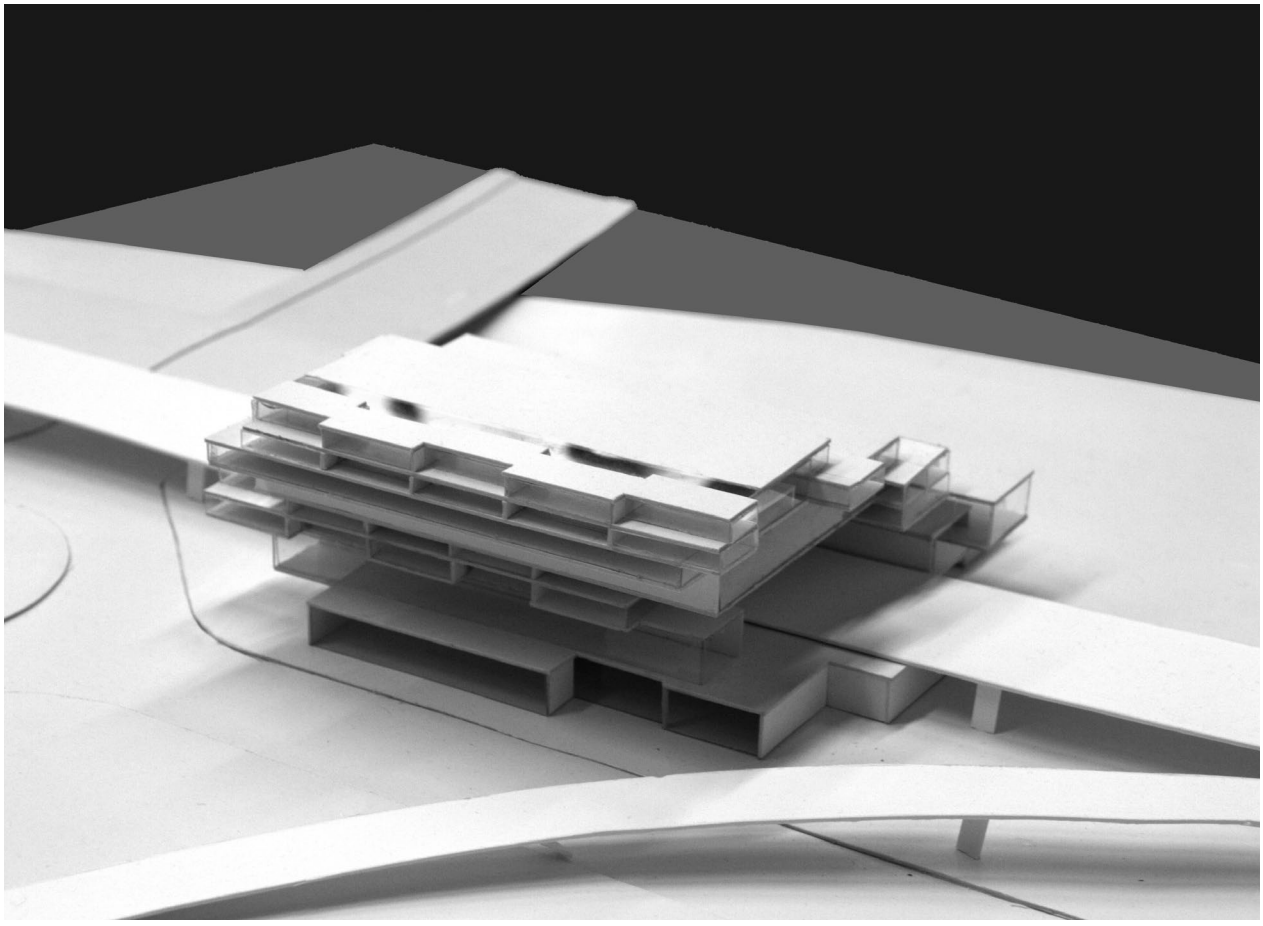


The PLACEMAKER creates a public-private complex over the A100. The megastructure consists of a residential complex with an integrated university library and student housing. The form of the building is the result of a stacking of individual boxes that are placed in such a way that the boxes bridge the Autobahn while terracing down toward the scenic canal. The terraced boxes allow for much outdoor space and an uninterrupted view of the landscape. Through the main entrance on the North side, visitors reach the public foyer with a café, shops and a cinema. The lifts take the visitors to the upper floors of the building, where the public library lies. The student apartments are wrapped around the library. The ground floor boxes house leisure facilities as well as an outdoor auditorium.

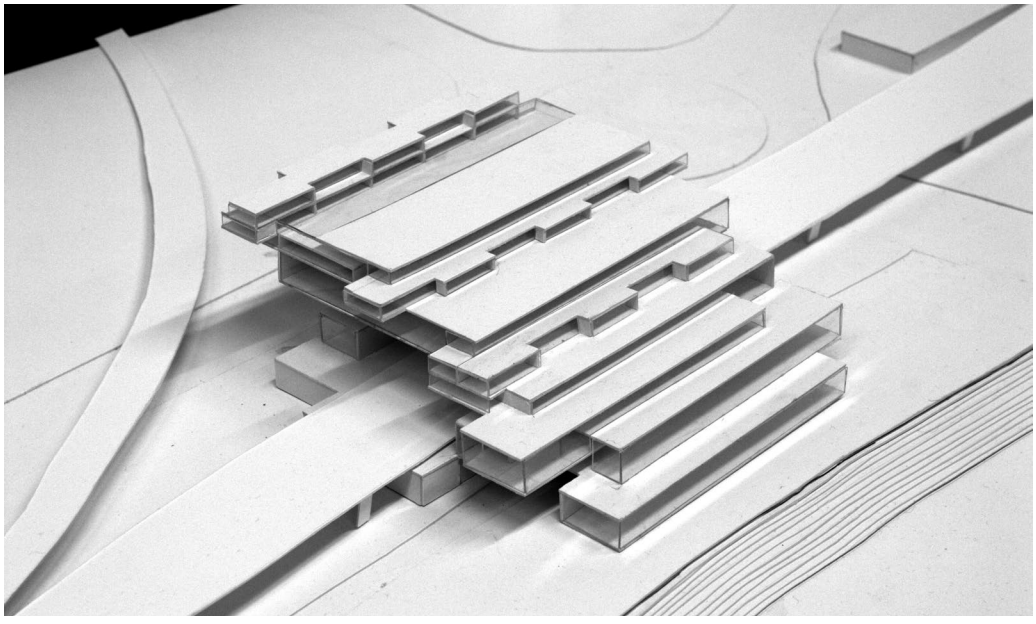








Model



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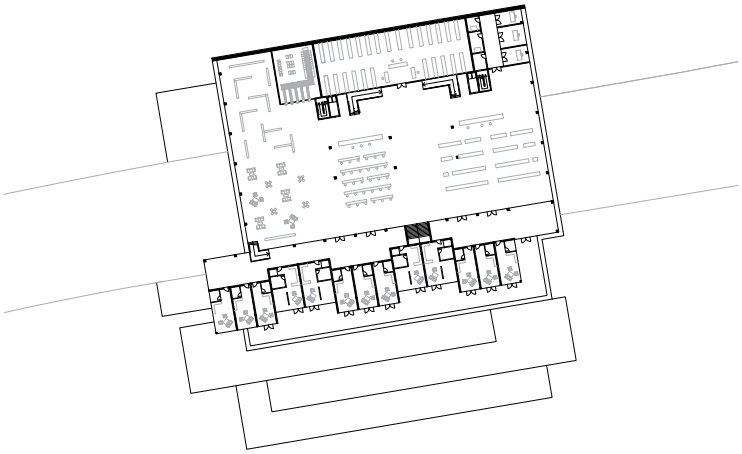
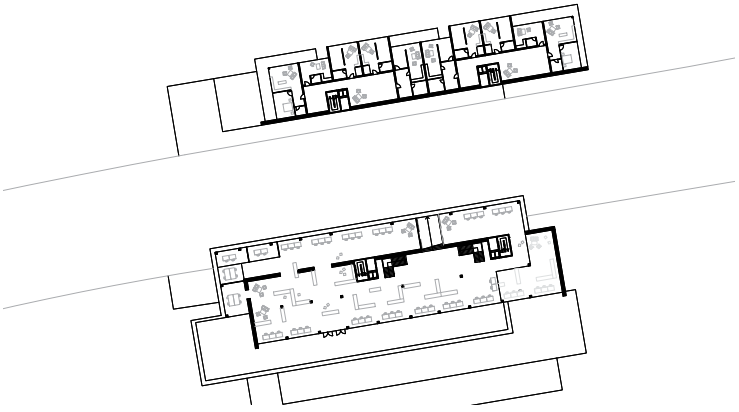
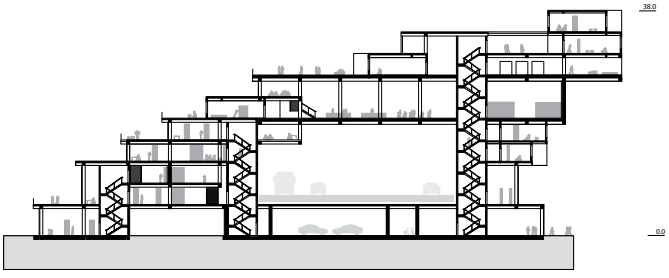


Level 2



Level 1



Cross section

PM02


Steglitz
Grazer Damm
Tiergarten
Sachsendamm

Highway Origami

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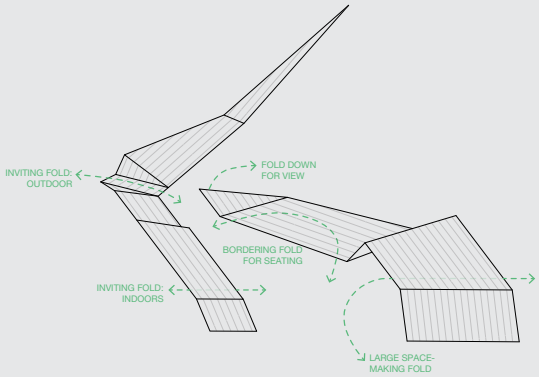
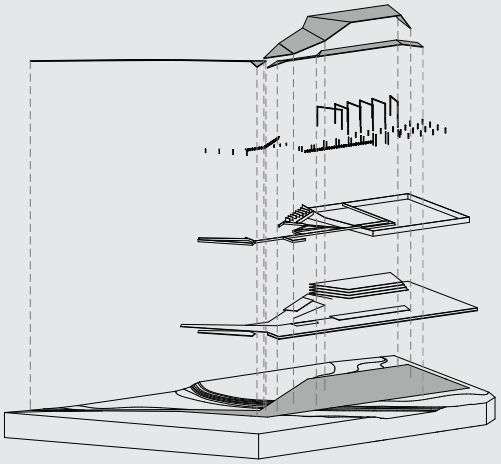
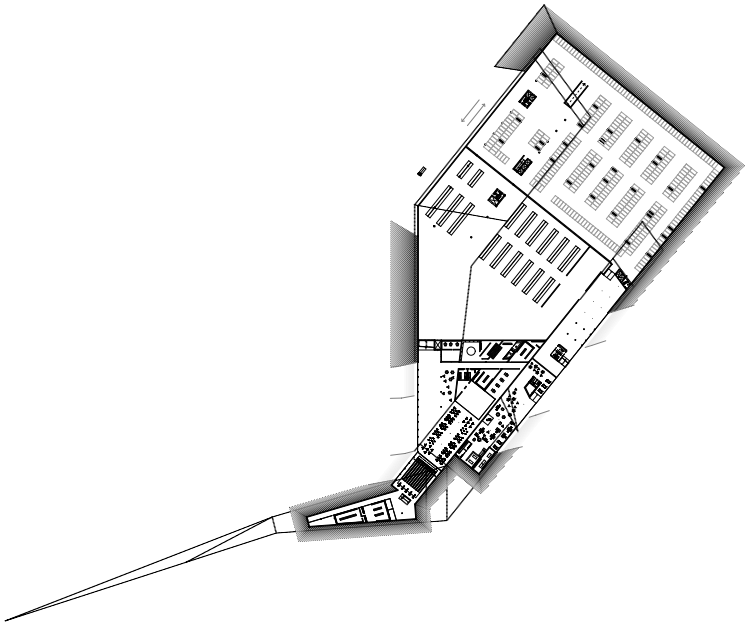
Monika Berstis
Lulsa Manago

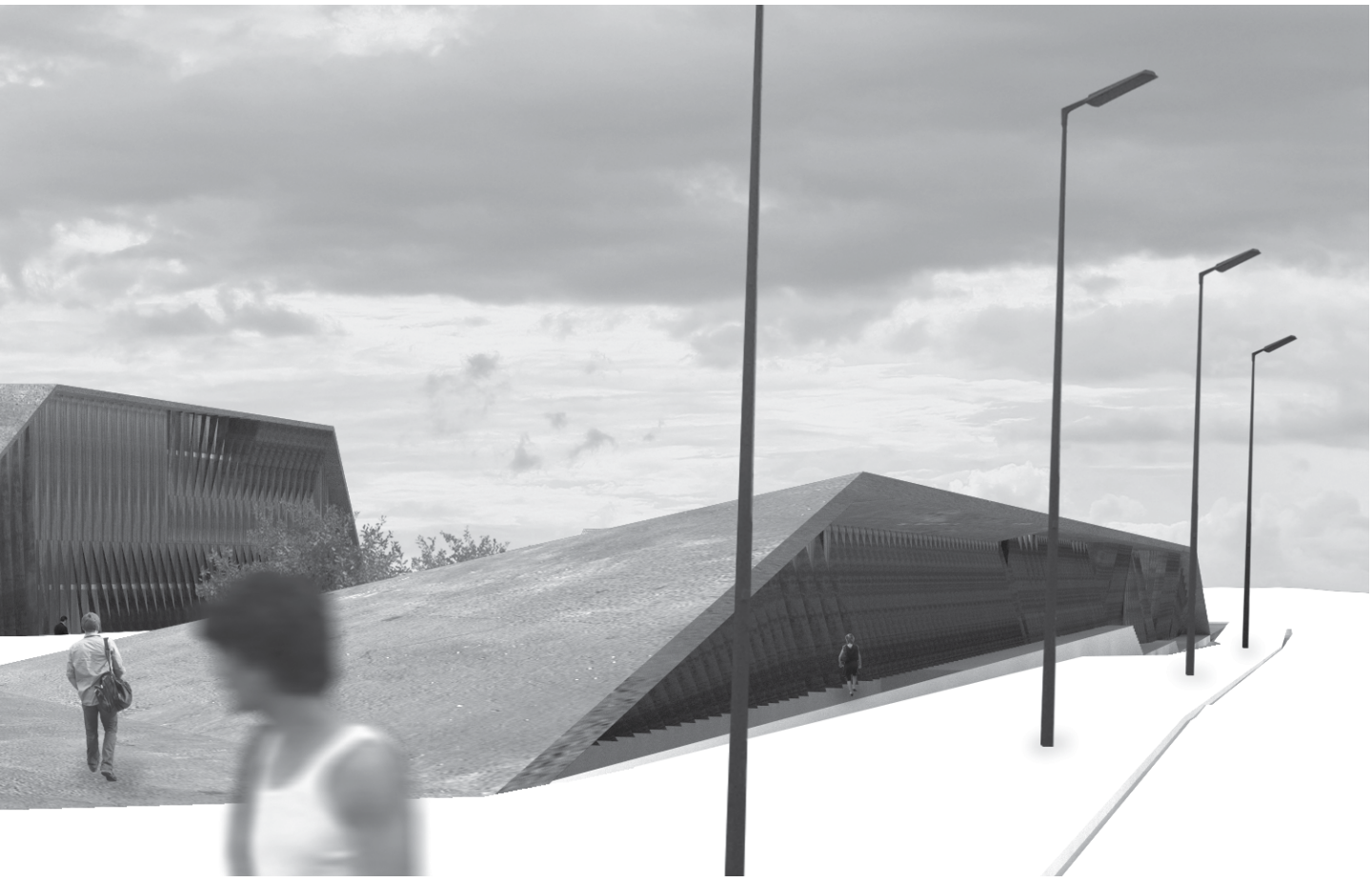


For reasons of convenience, various isolated functions occupy land along the highway with no real relation to one another. The highway itself divides the area, hindering encounters that foster community. The PLACEMAKER design incorporates entities found along the highway in a folding system, which constructs a public space, enriching the surrounding community. Programs of various size and nature are integrated in a continuous geometry of folds along with new programs introduced to serve location-specific needs. The fold-system frames a series of plazas and offers the roof as an accessible part of the landscape, creating public space in charged conjunction with the highway. This system can be implemented as a tool to foster community and sense of place in developing highway areas.

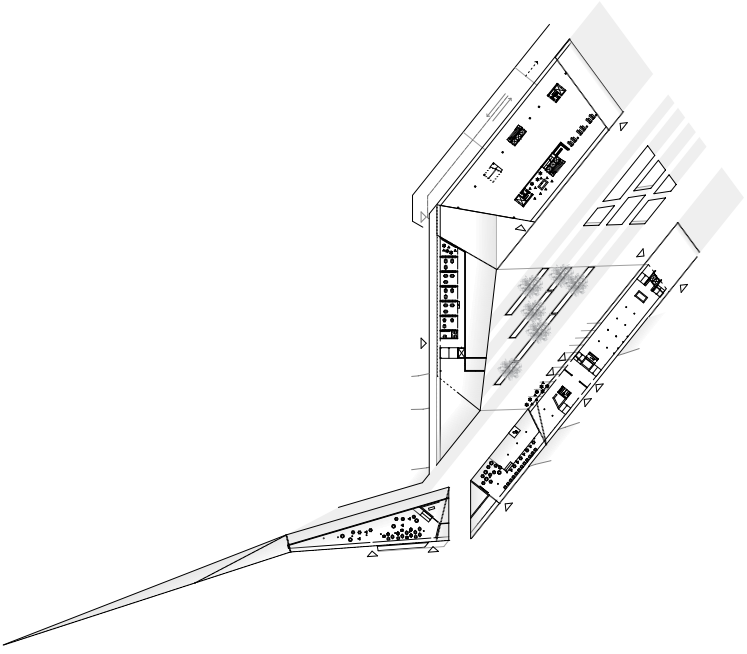




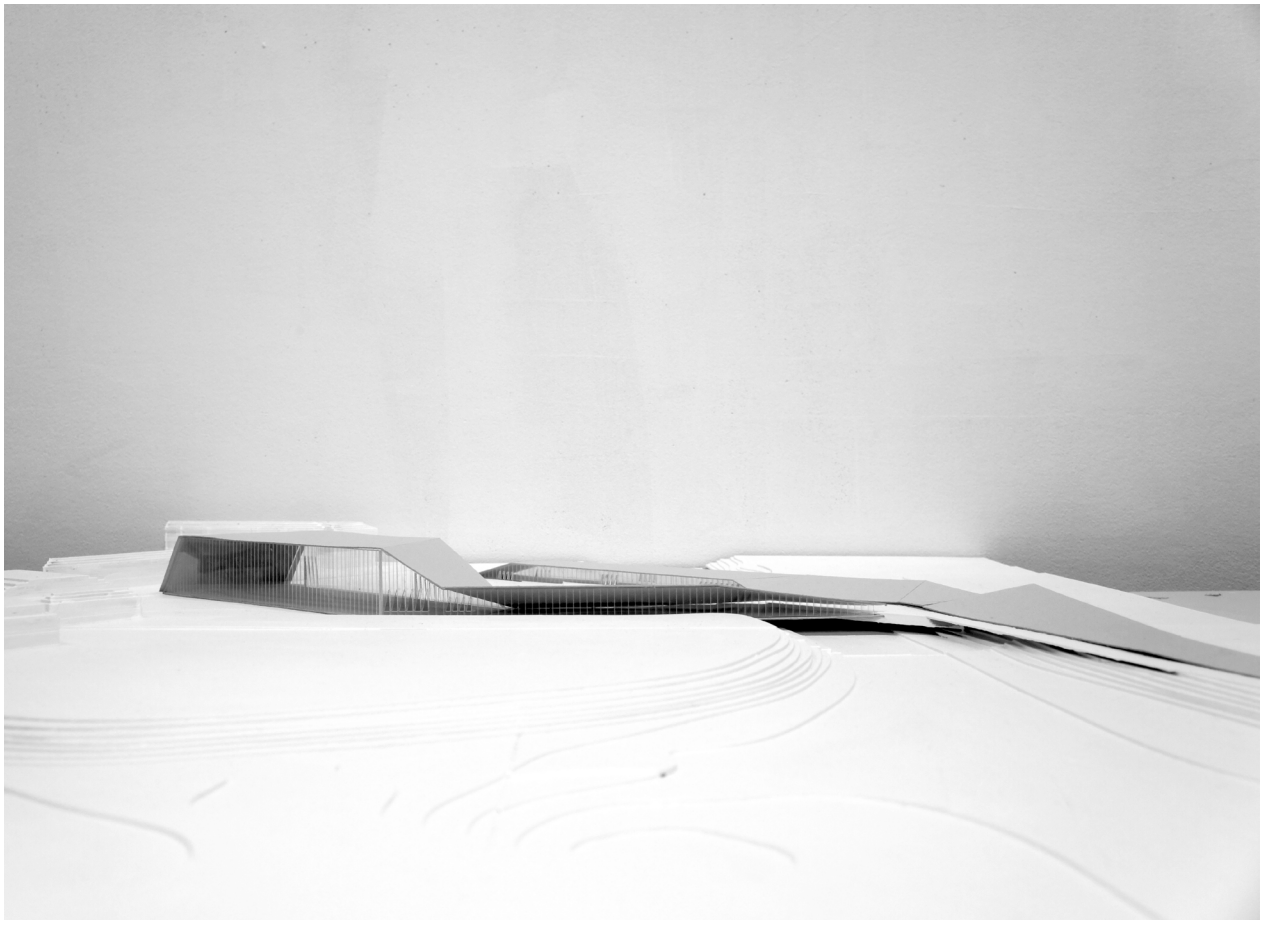
Level -1



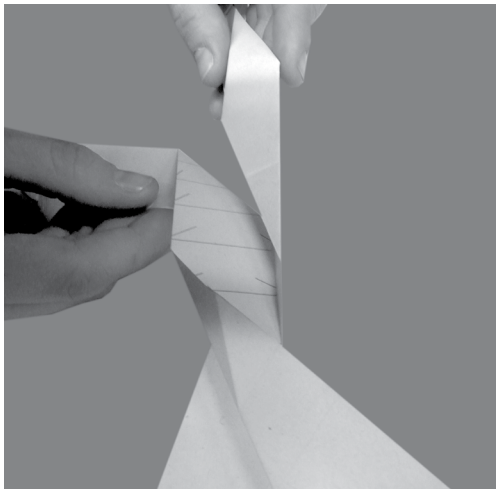
Context



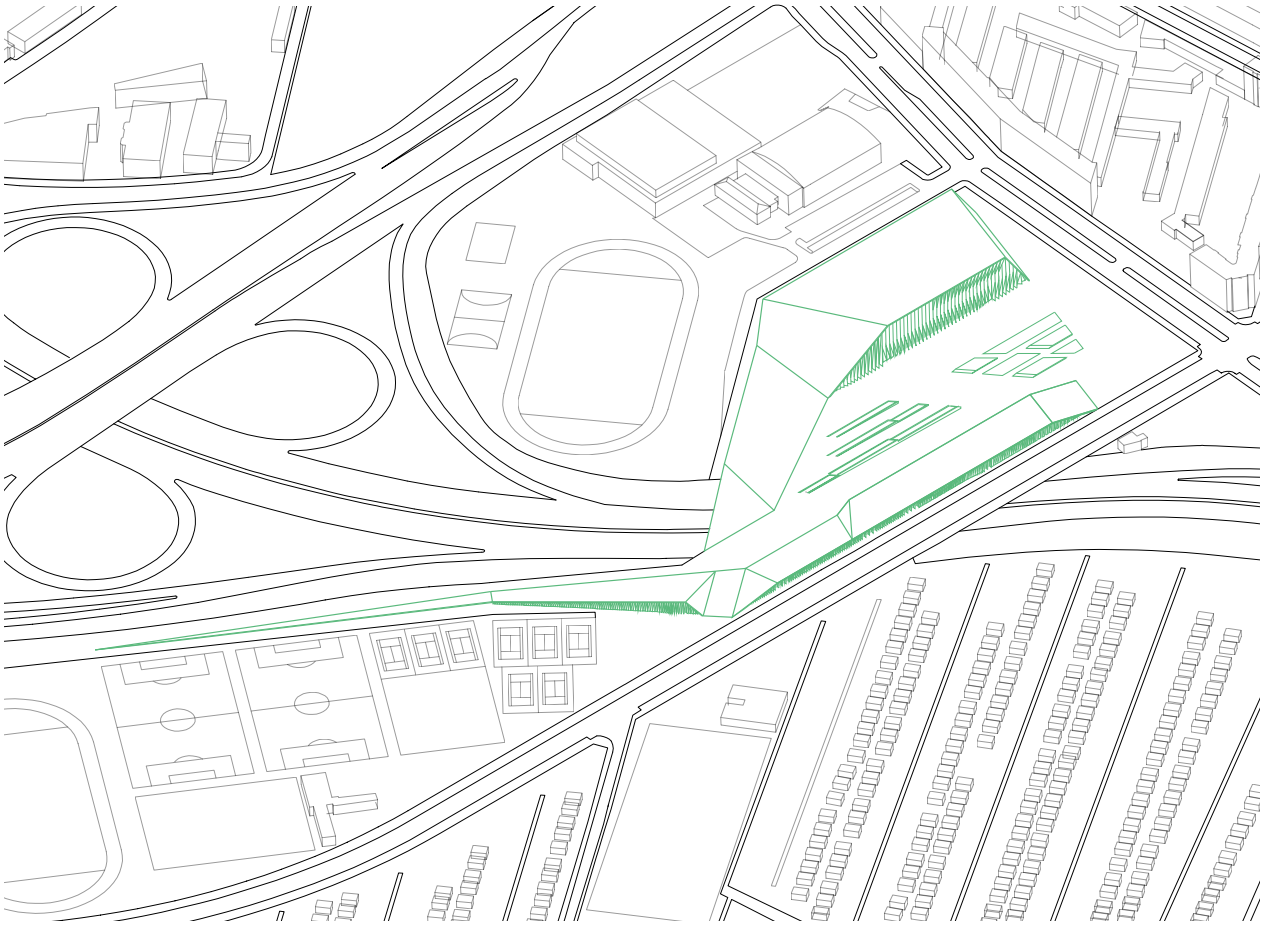
Level 0



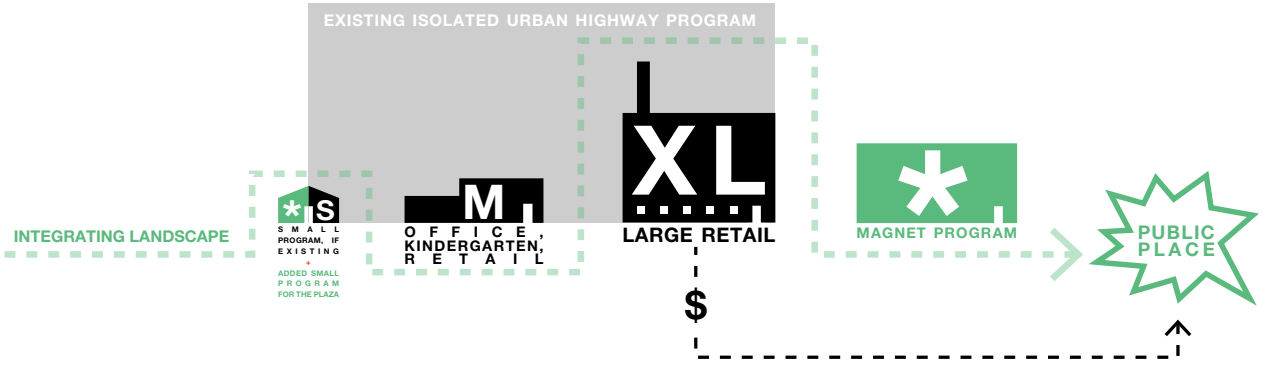
Model



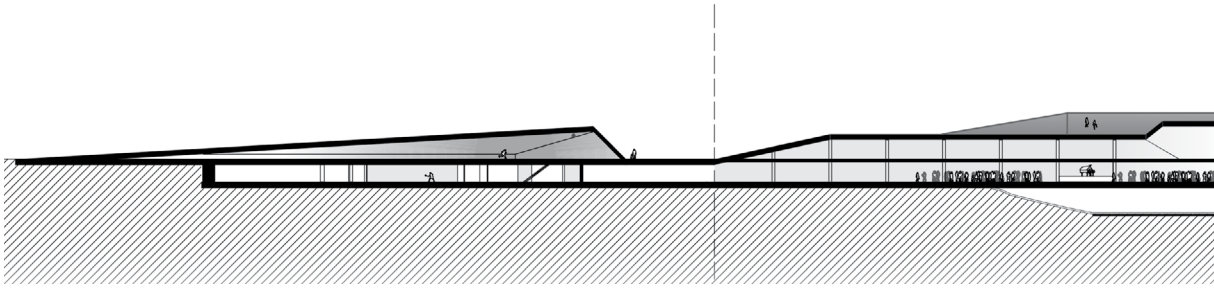
Folding

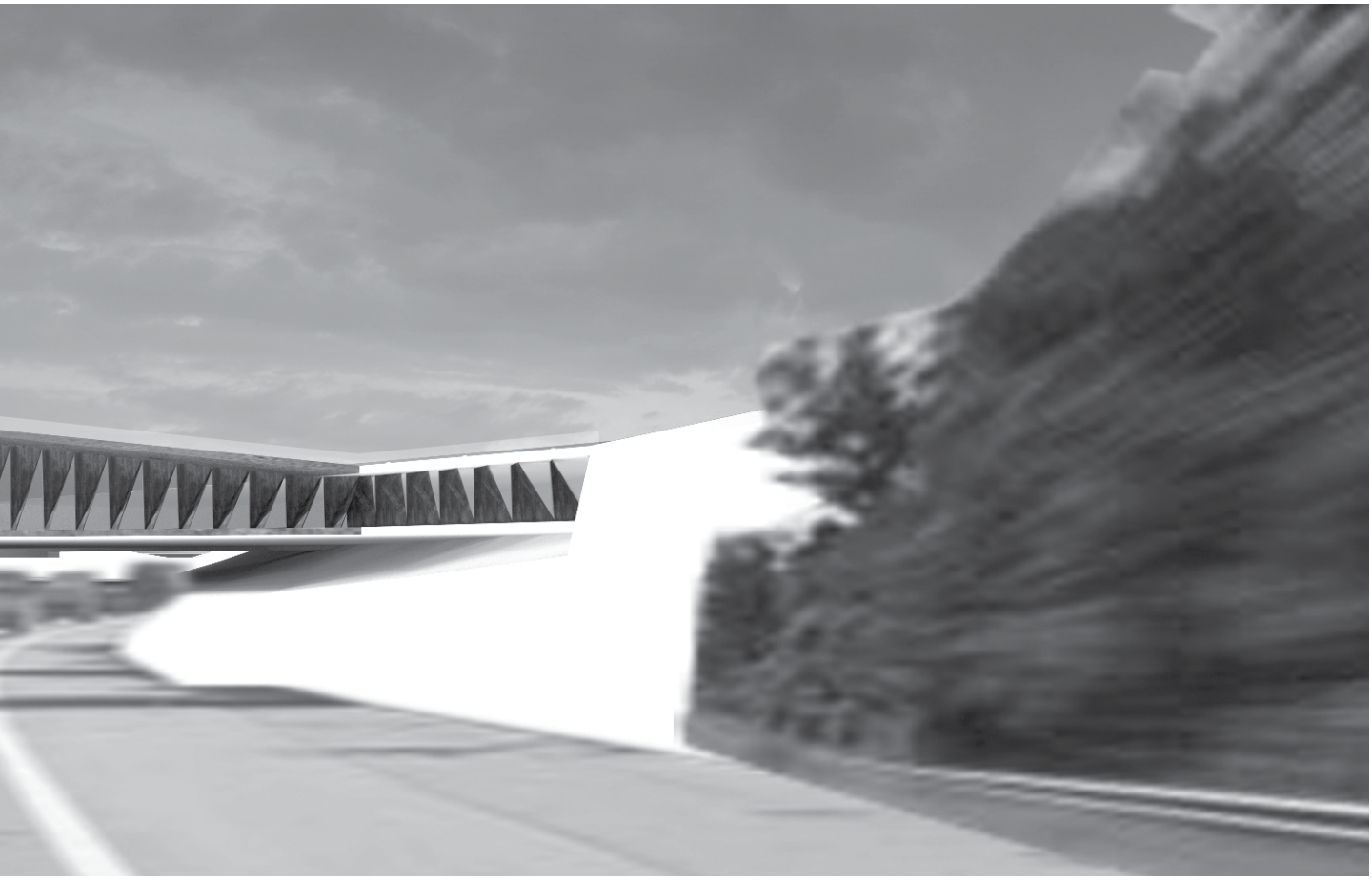


Urban placement

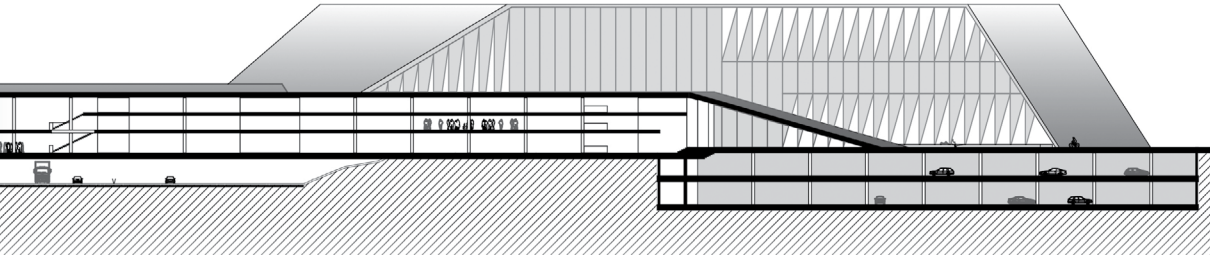


Urban strategy





Sound barrier



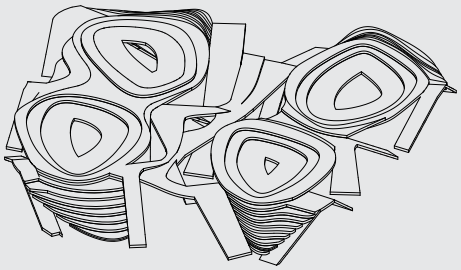
Longitudinal section

PM02

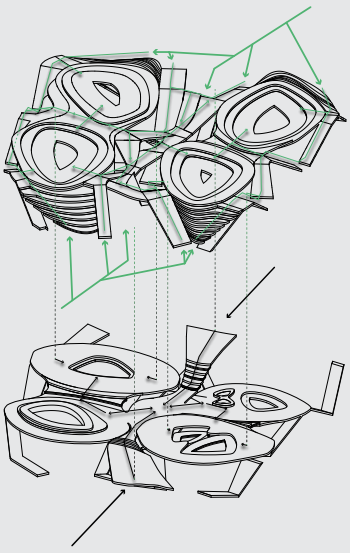
Diatom

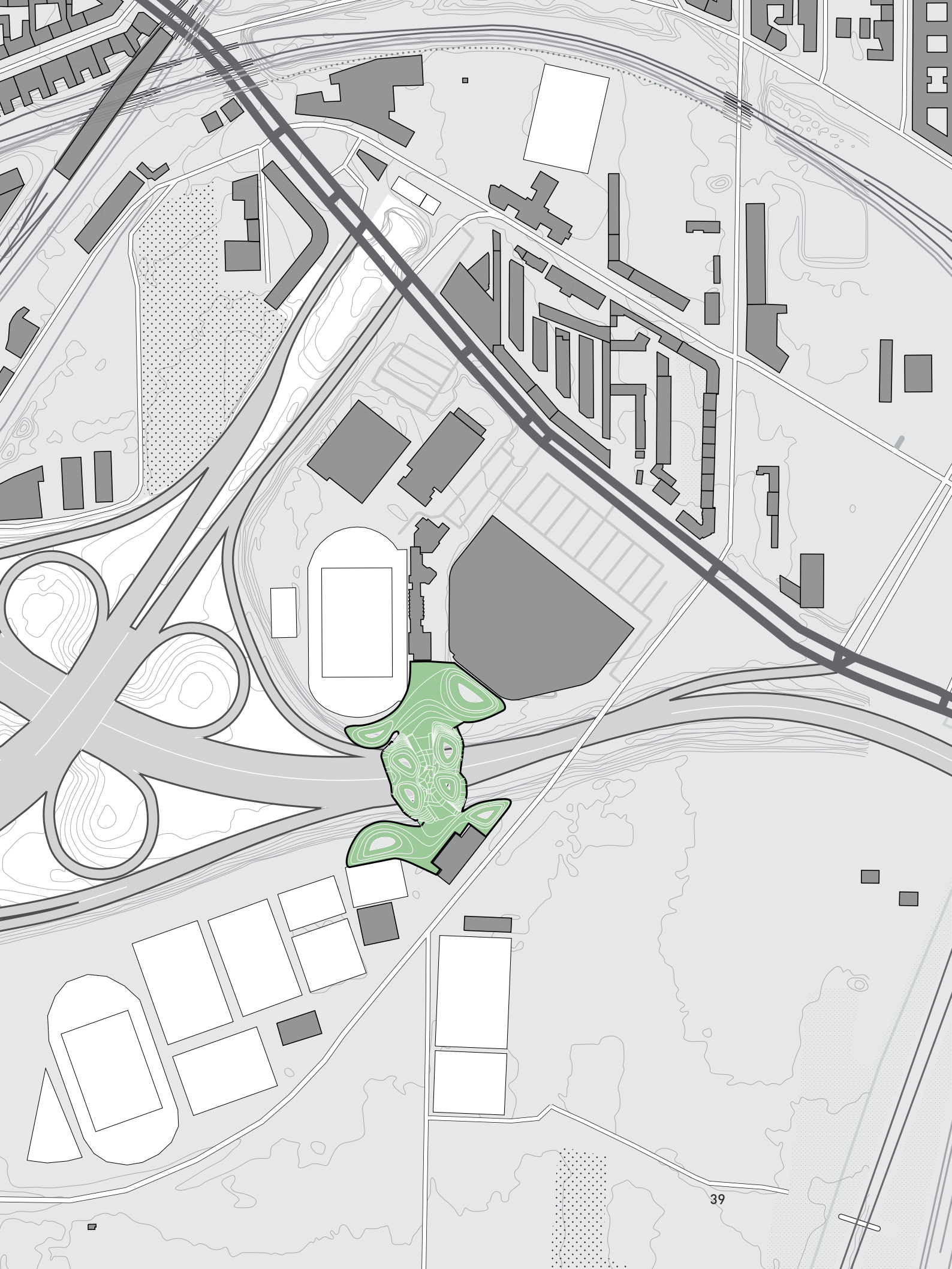
—

Simon Schulz
Sebastian Pellatz



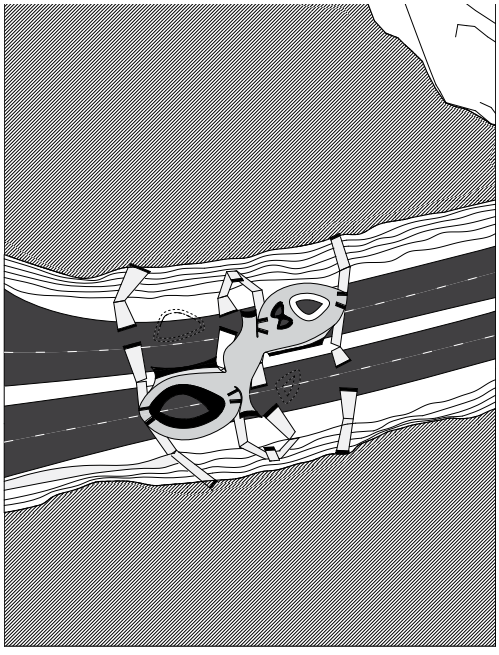
The PLACEMAKER is a sports center that ties together the antagonisms of its highway context by connecting the different scales of infrastructure that run above, through, below and around the building. The main road to the North, for example, extends and branches into a series of meandering paths that run through the building's structure while finally plugging into the existing trails to the South. The paths divide the building's interior into individual zones defined for specific sport programs. The roof creates a friendly outdoor backdrop for the users. The lower level celebrates the A100 as a visual experience and houses exhibition and theater space. The structure is based on a space-frame which is twisted and turned in order to adjust to the complexity of the site and span over the highway.

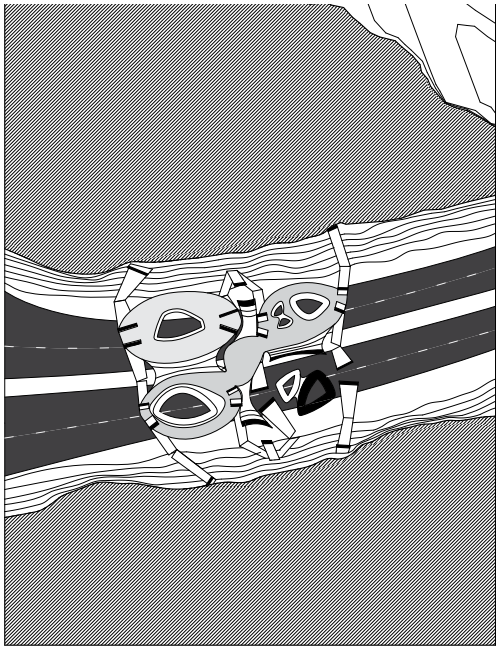




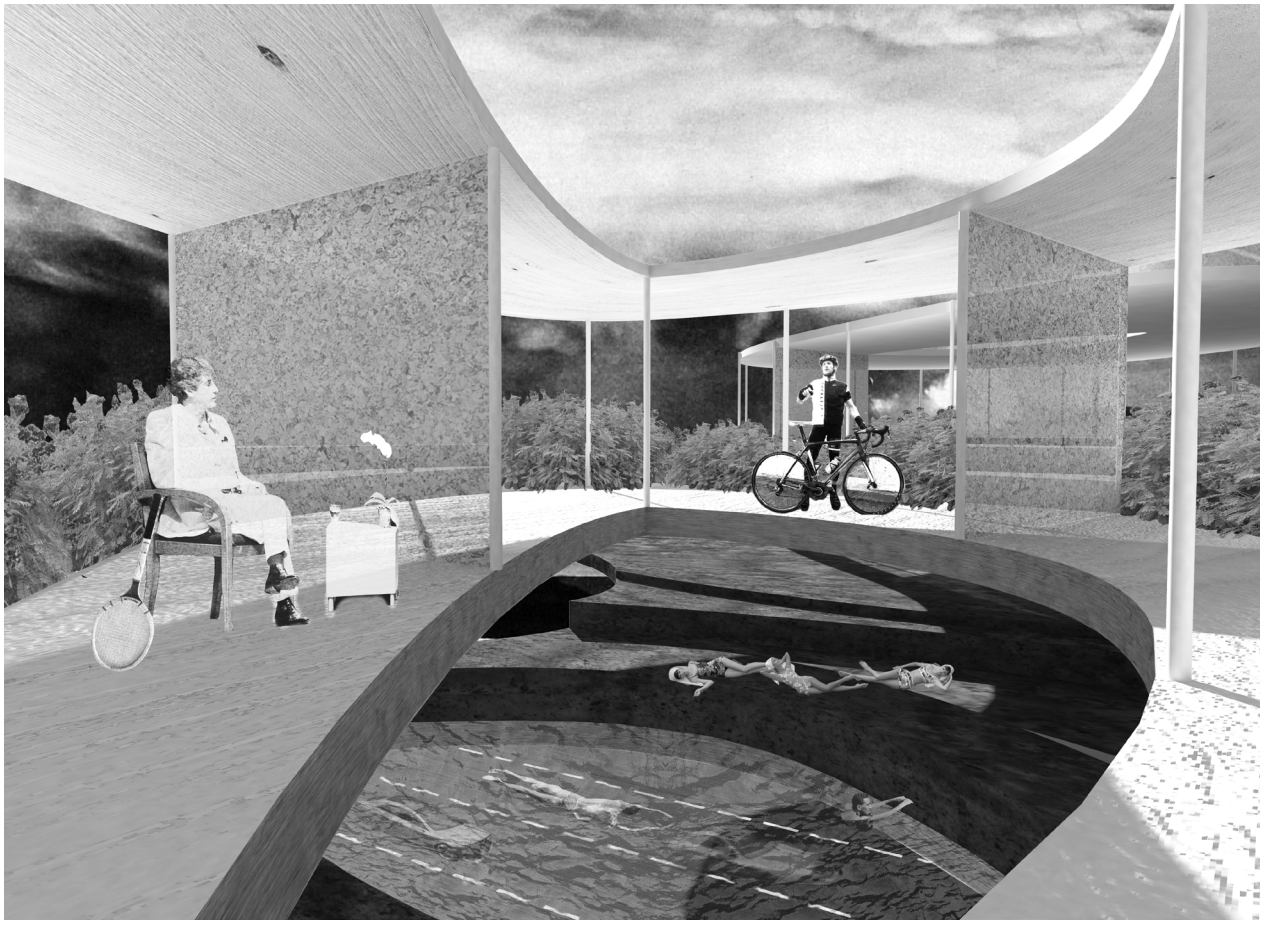
Porosity model

Street view

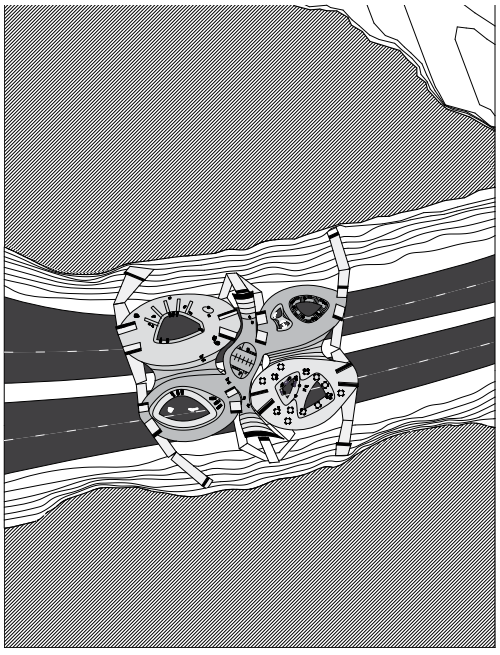


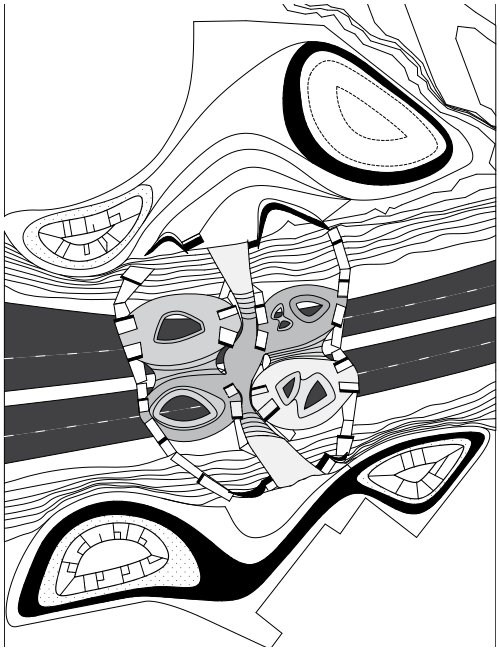


Levels 0 + 1

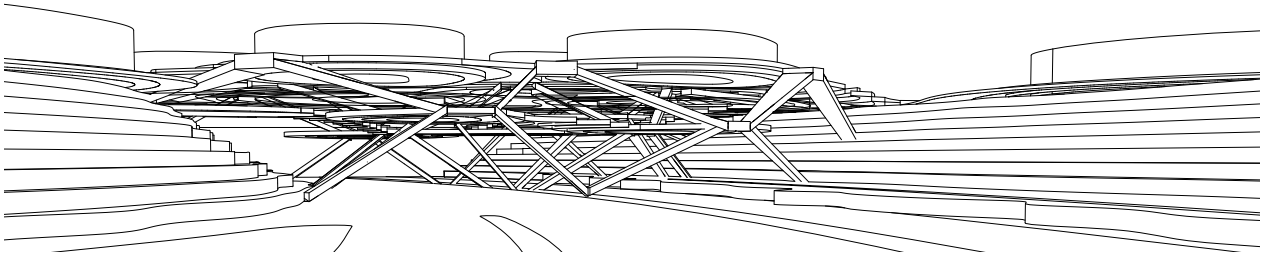


Interior courtyards

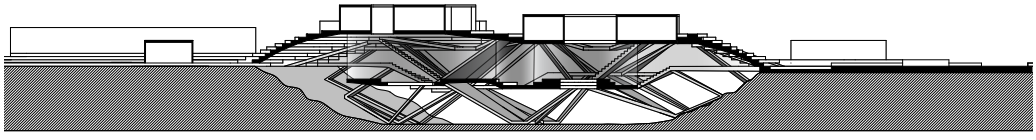




Levels 2 + 3

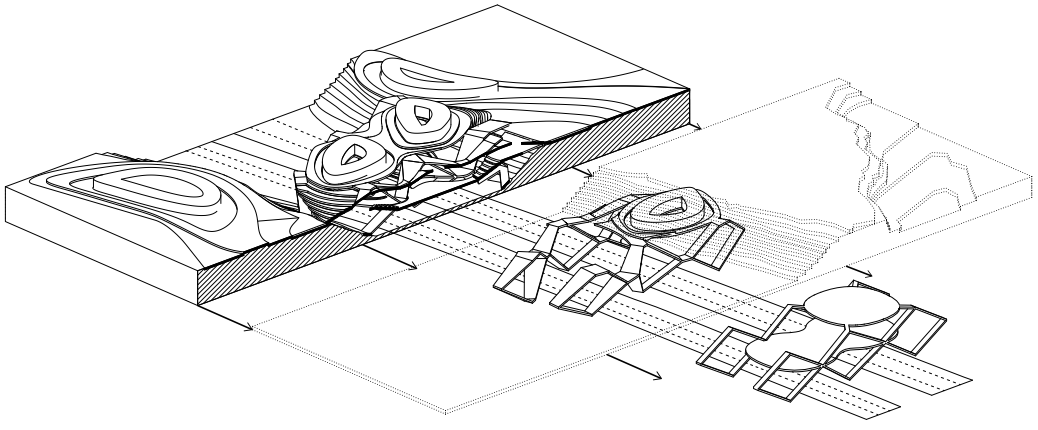


Street perspective



Cross section

Model



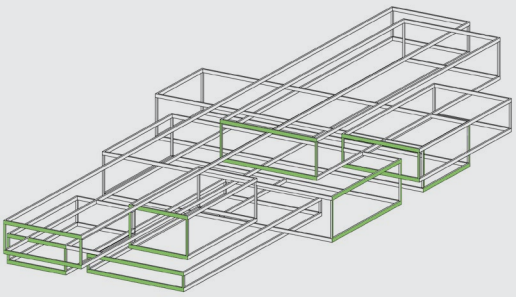
Constructional diagram


PM03
Magdeburg Leipzig
Schöneberg
Tempelhofer Damm
320 m

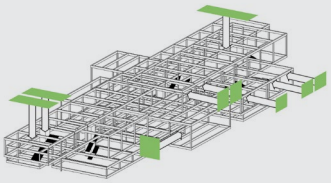
Framed

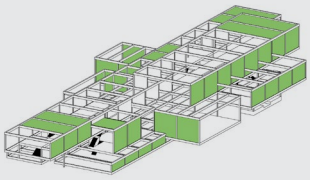
—

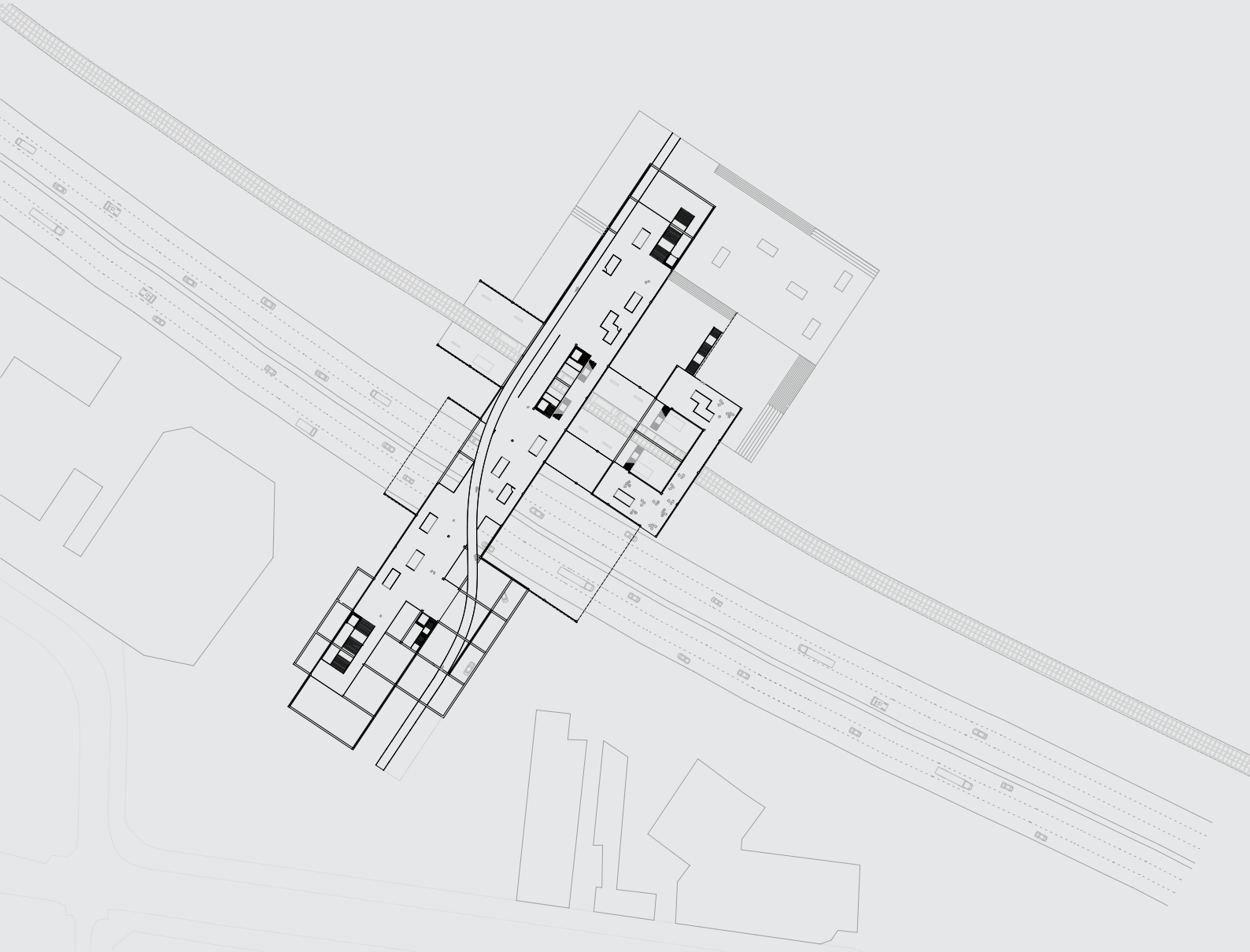
Anett Eberhard
Daniel Nuhn

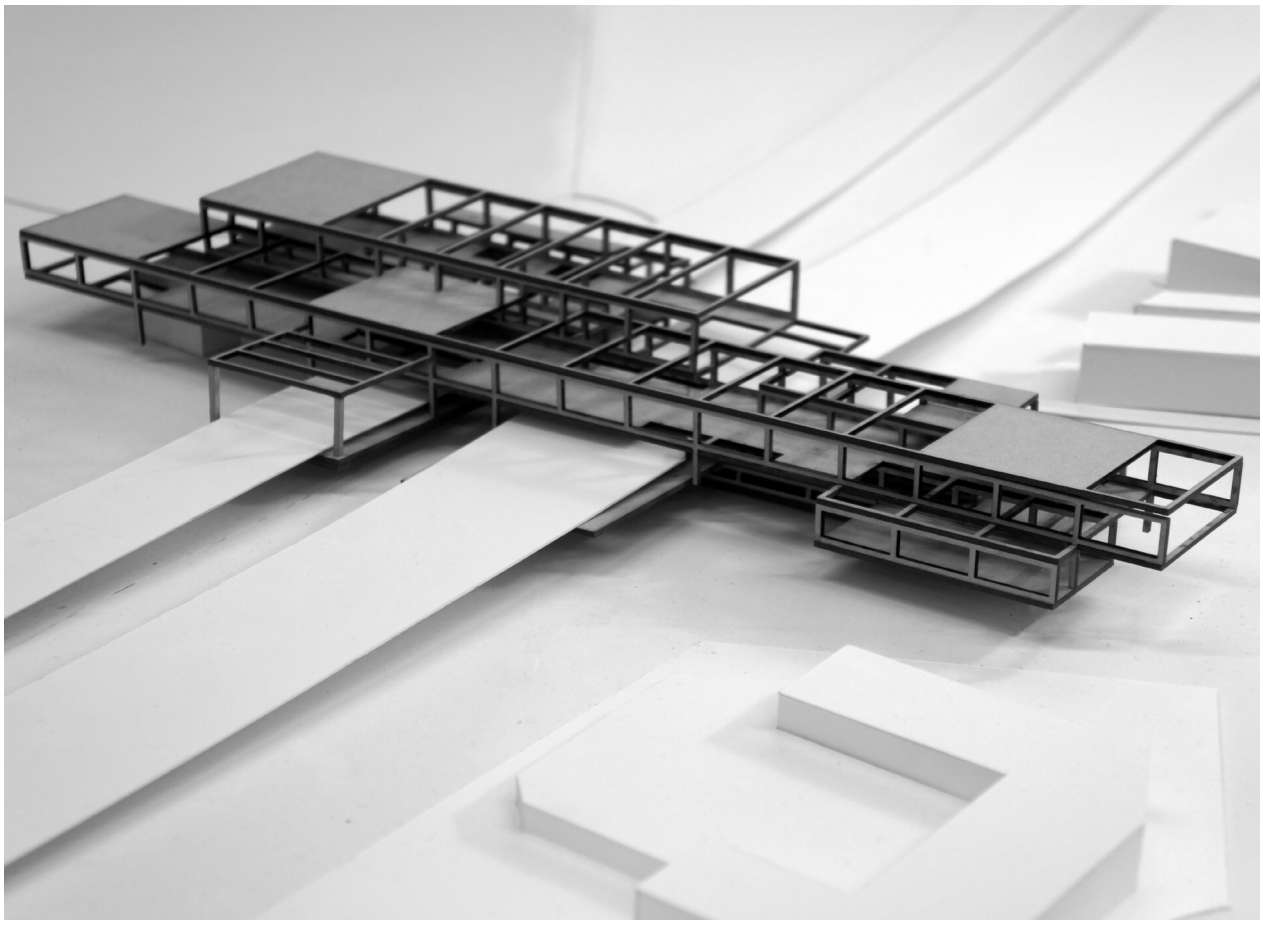


The PLACEMAKER is located on the edge of the Tempelhofer Feld. Although the city and the vast open space of the former airport lie next to each other, there is no immediate connection between the two. The only entrances are located in the North, West and East side of the park. On the South side, the A100 and train tracks set a boundary between the park and the city. The new structure bridges this boundary and creates a gate to the park and city. It also works as an infrastructural hub that links all modes of transportation by adding an underground parking, a S-Bahn station, a bike path and a pedestrian walkway. The structural design is based on overlapping steel frames that create confined spaces in their intersections through the use of mesh panels for the floor, wall and ceiling.

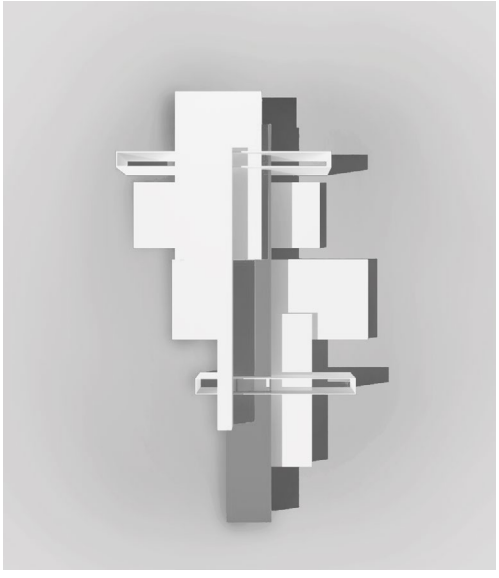






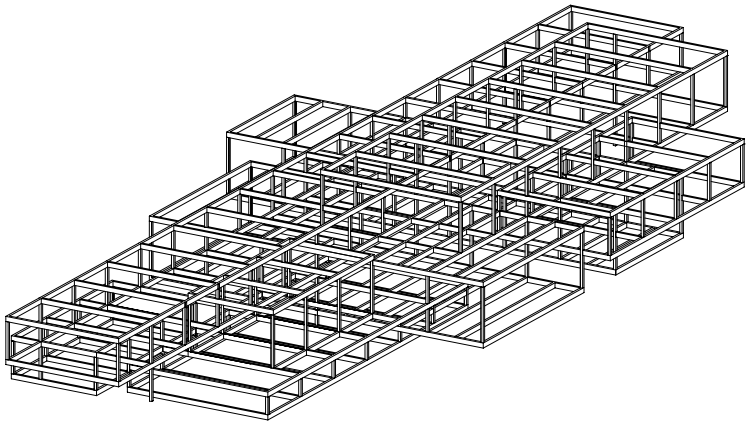


Model

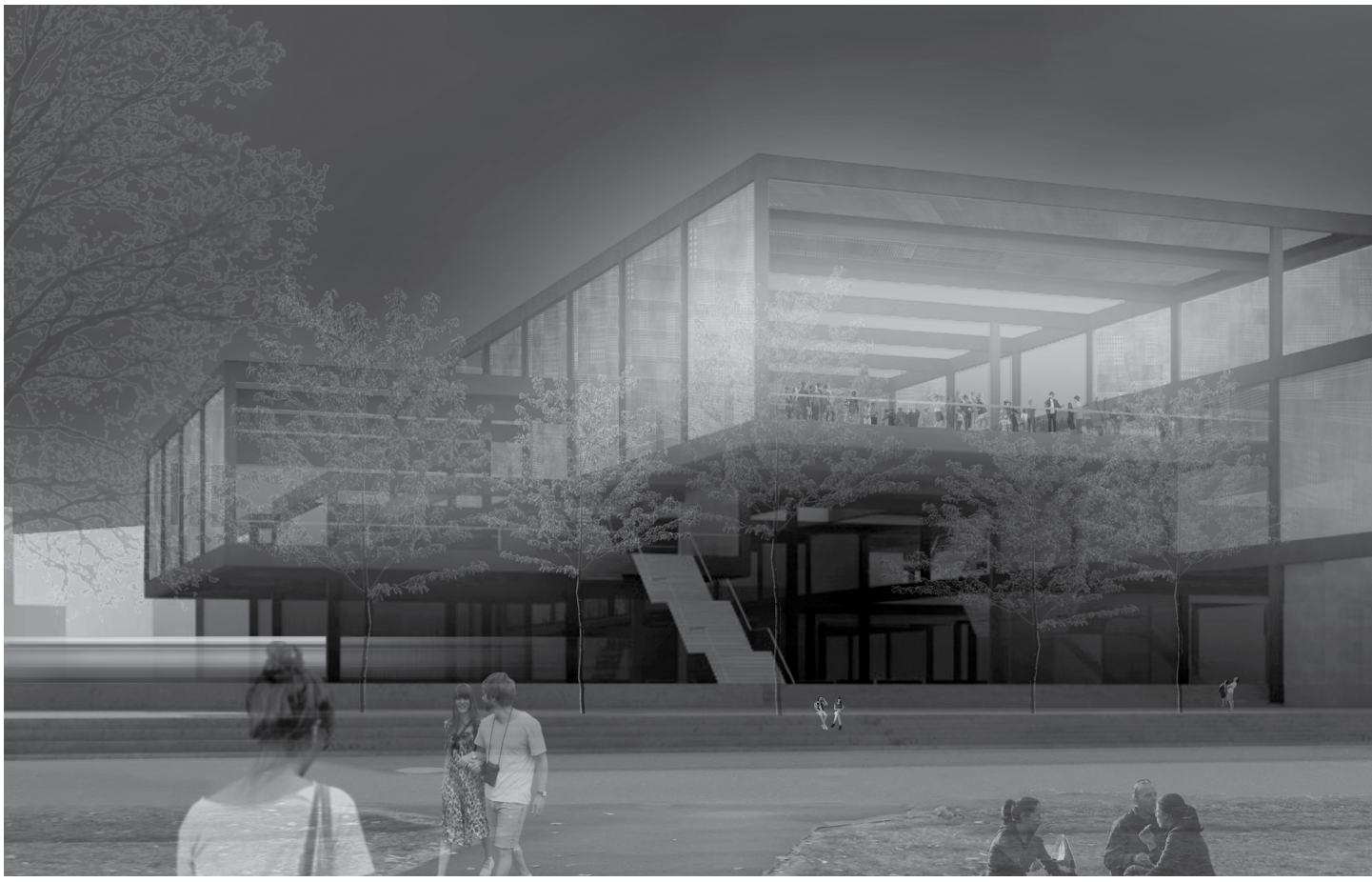


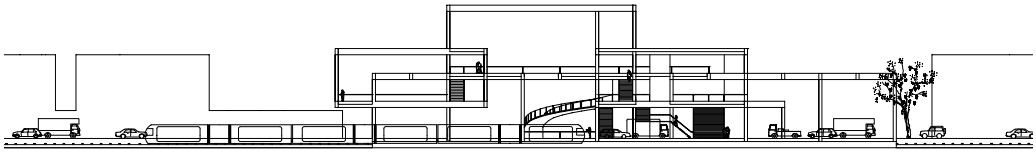
Model

Semi-public urban space



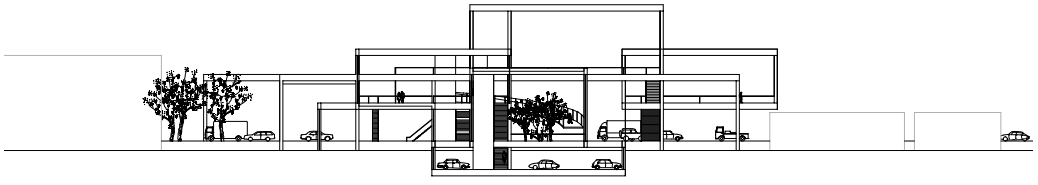
Structural Frame





Cross section

Park entrance



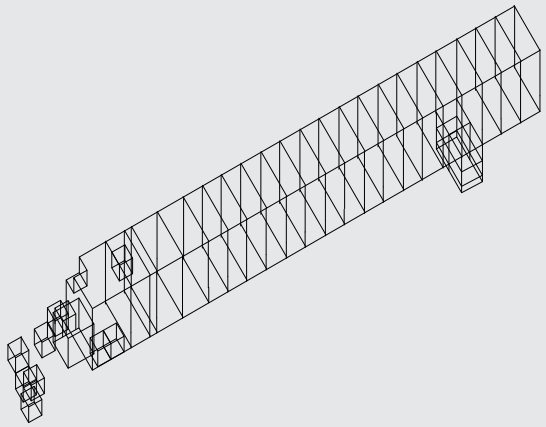
Cross section

PM03

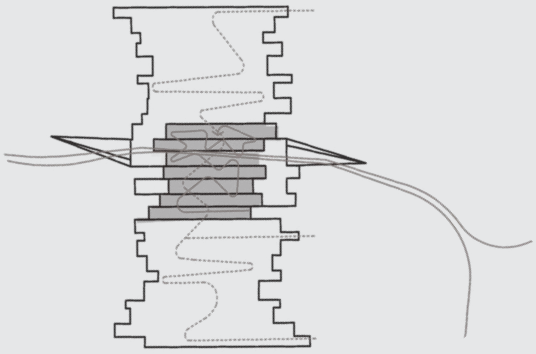
Connecting Prison

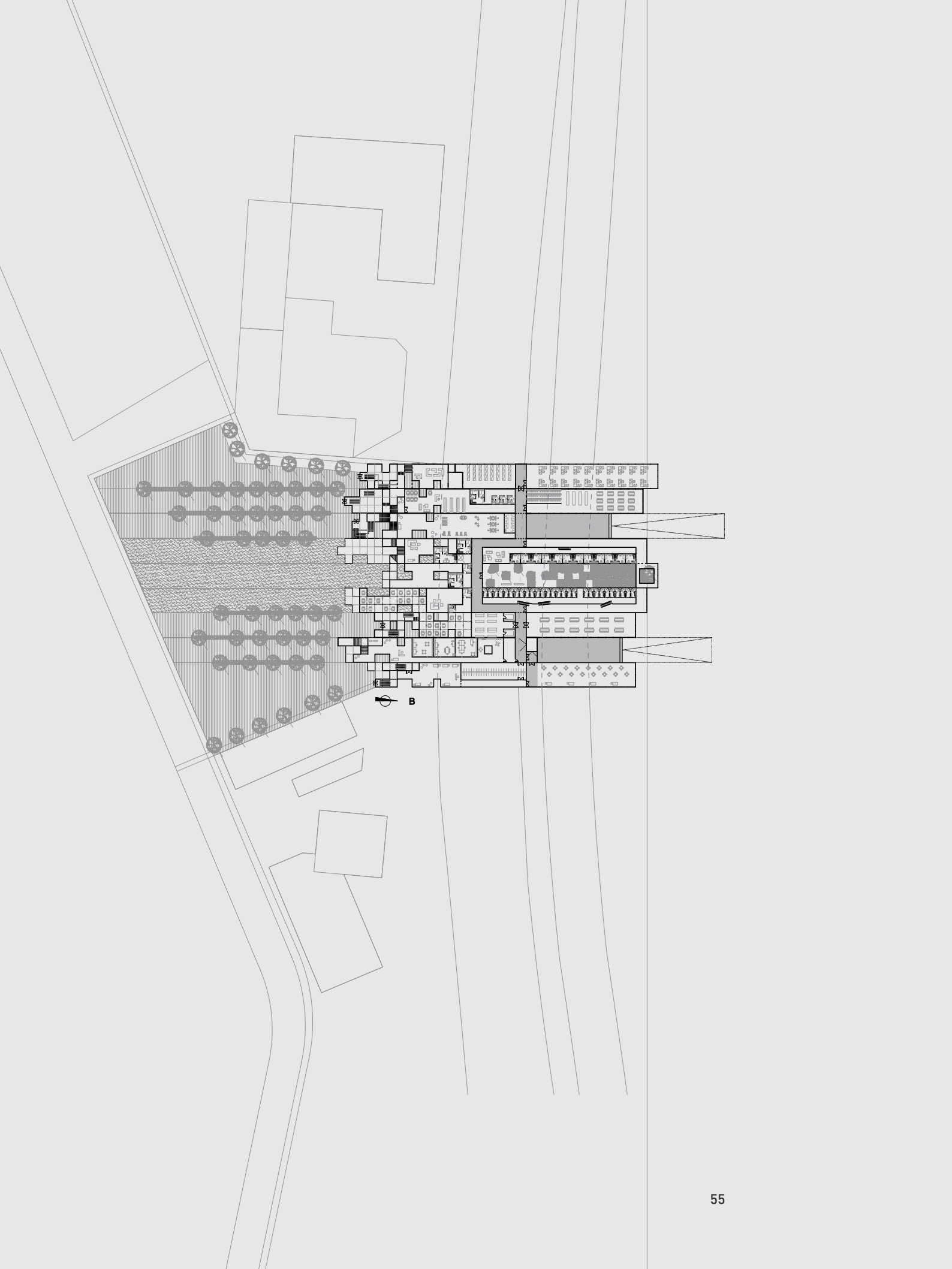
—

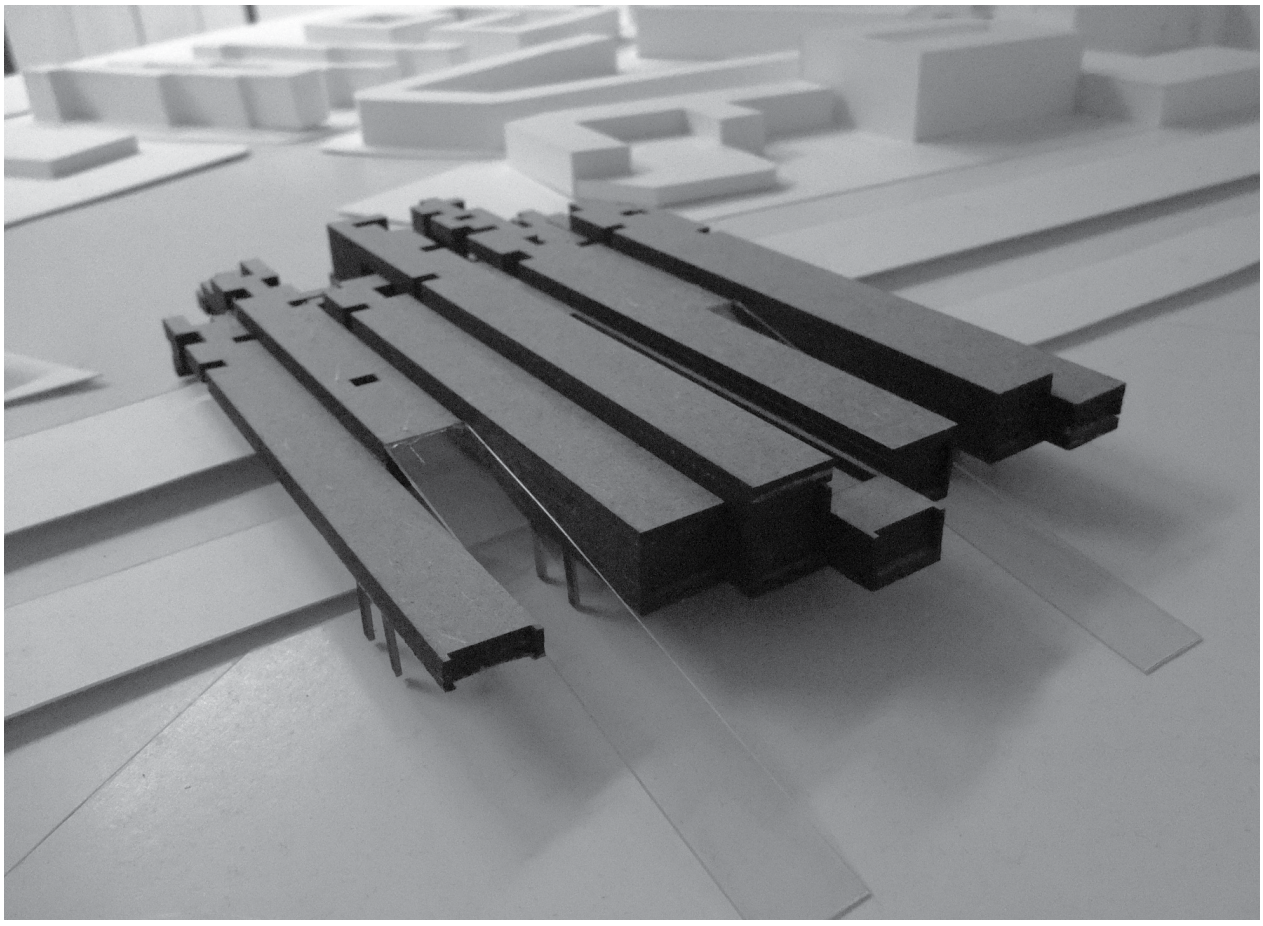
Spyridoula Dedemadi
Jan Grüneberg



The PLACEMAKER operates as a transitory place between the city and the park of the former airport. The building creates a new access point to the South of the park while also bridging the A100. The program juxtaposes open public space to enclosed prison space. The prison acts as a dystopia that is to be re-socialized by interacting with the public space. The context's industrial structure, the Autobahn, the railway and the park create a series of layers through which the public passageway of the building penetrates. The structure's porosity is made of a public walkway that mixes with enclosed prison space through a formal pixelization of the building. The project structure is developed as a steel space-frame, which deconstructs into smaller units from the North to the South end of the building.

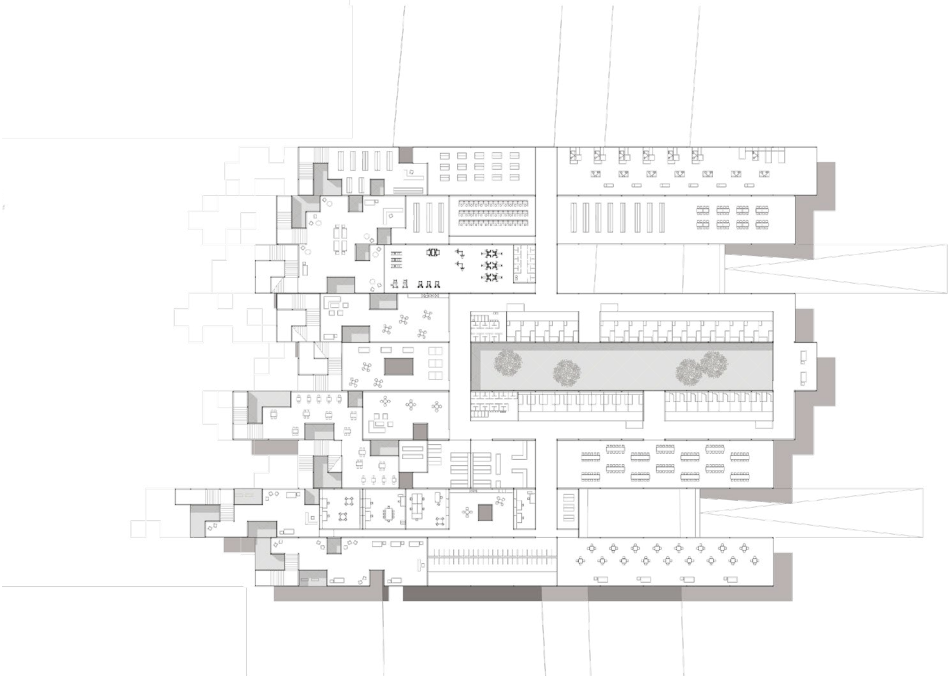



B

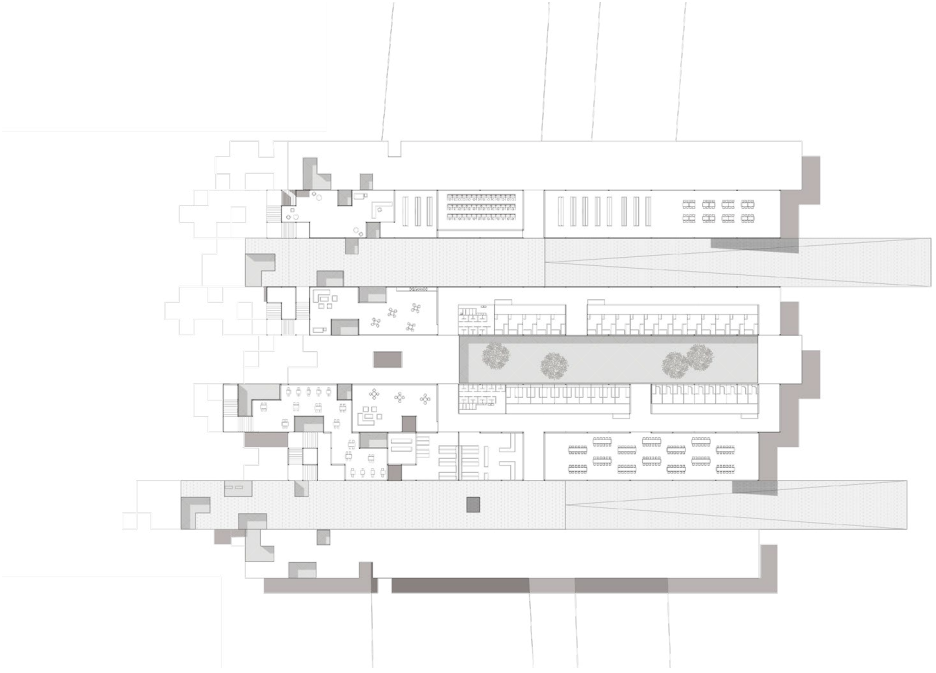


Model

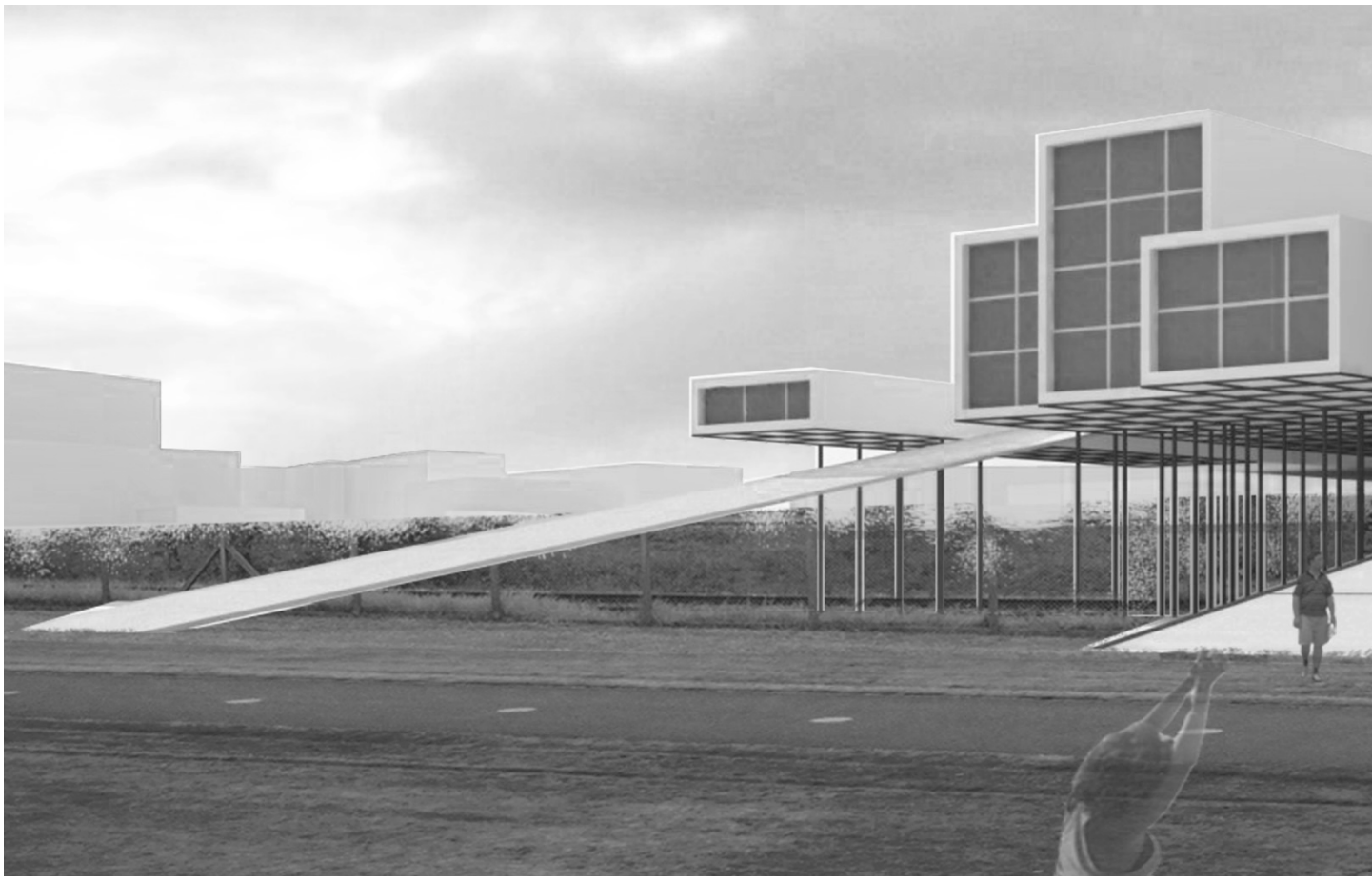
Kite workshop

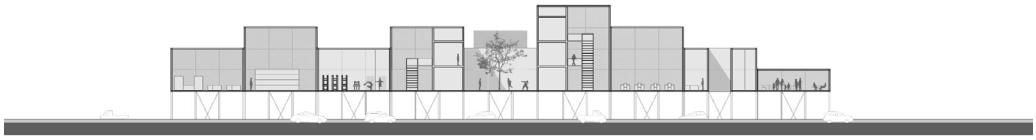


Level 1



Level 2





Longitudinal section

Urban trajectories

Cross section

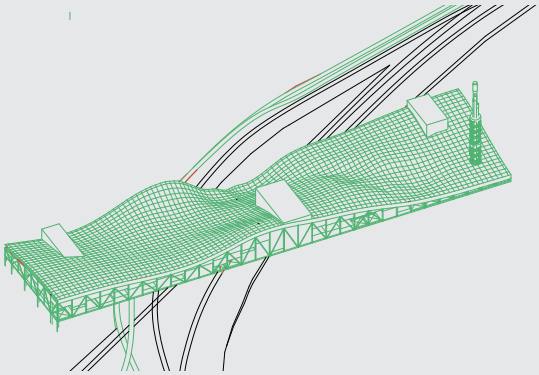
PM04


KANOLD
Gas • Wasser • Heizung
Tel.: (030) 44 04 01 88
B DK 5255

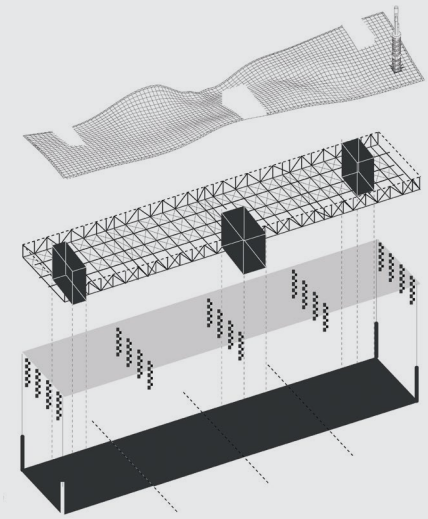
Incinerator

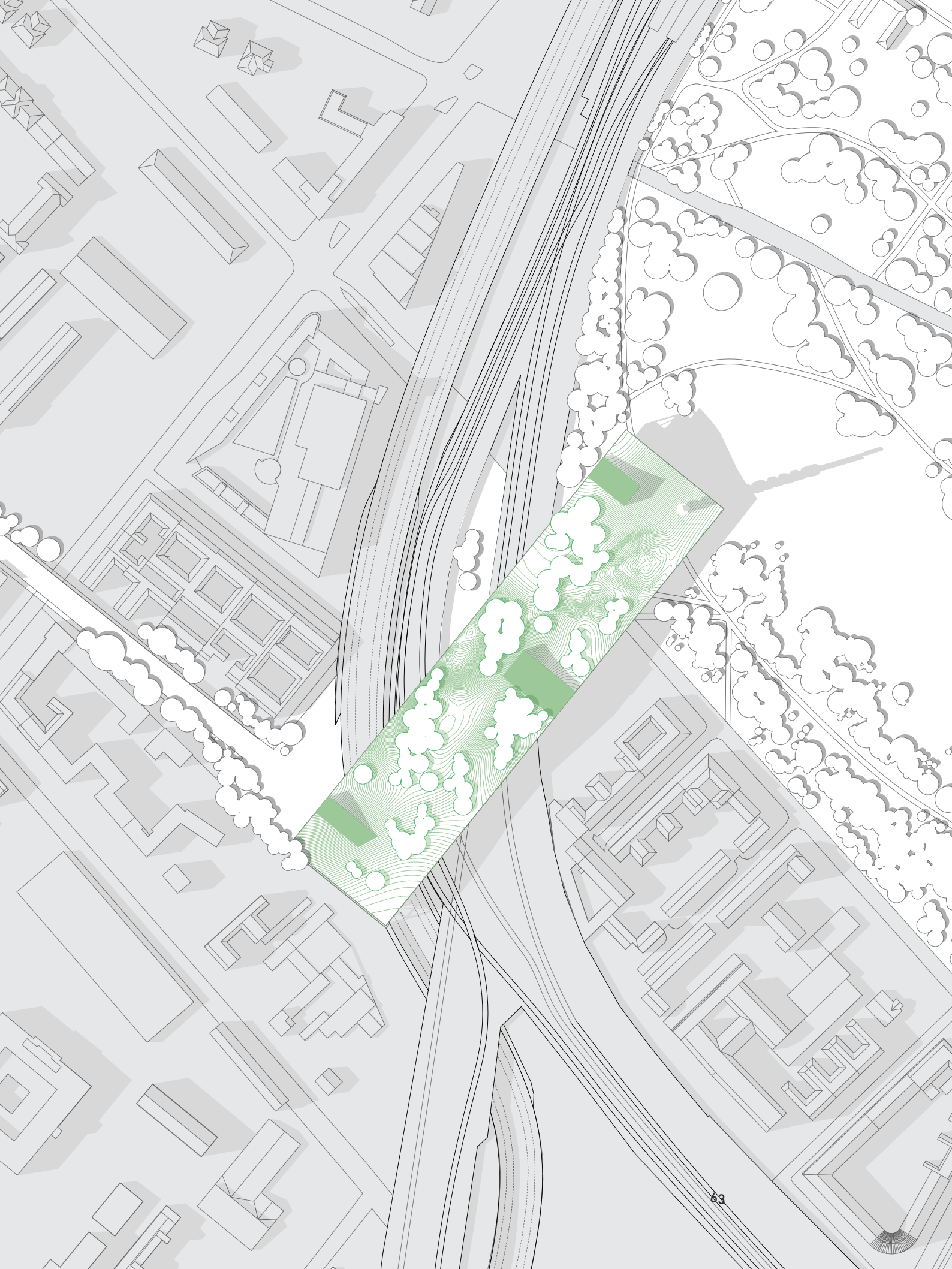
—

Ilkin Akpinar
Nikos Athanasiadis
Luca Mulé

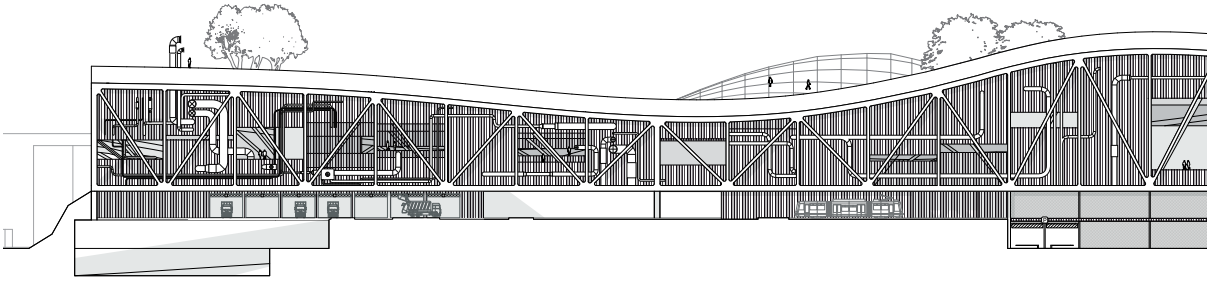


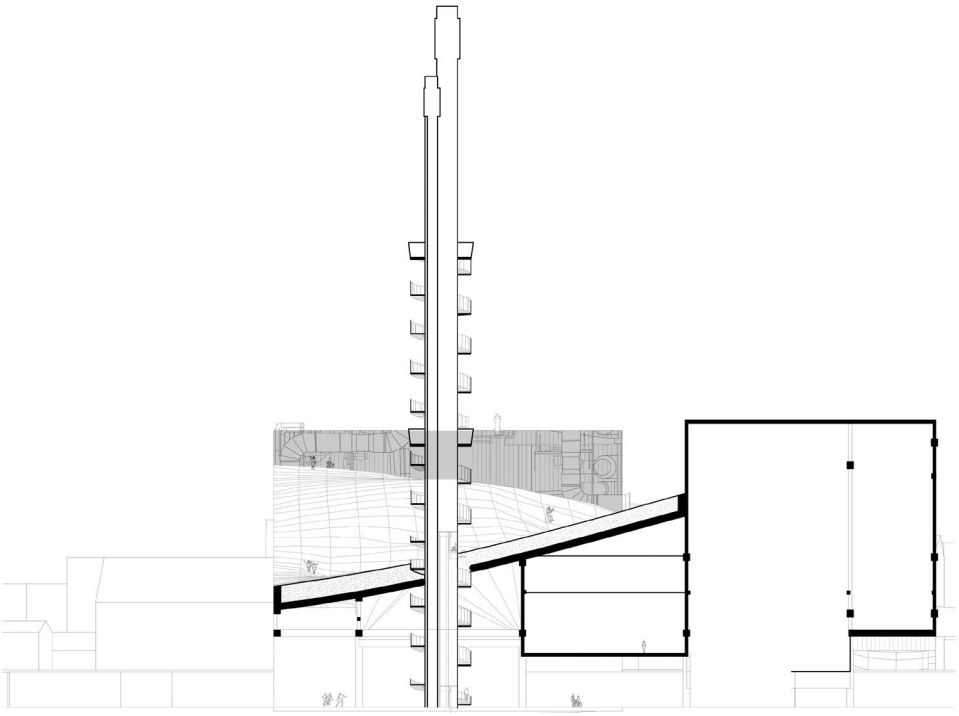
The PLACEMAKER is located between Görlitzer Park and Treptower Park. It hovers above the future highway extension of the A100. The initial idea was to create an alien structure that considers the needs and qualities of the surrounding parks. Due to the given infrastructure conditions of the Autobahn and existing railways, an alien program was desired that would combine logistics with place of production. The incinerator became the ideal program. The trash import and export can easily be managed through the use of the highway for incoming trash and the railways to export the burnt ashes. The incinerator gives the city back energy in form of district heating and electricity. It can power nearly 50.000 households a year. The ashes are used for fixing materials at mines all around Germany. The building's roof is an artificial landscape that allows people to walk from one park to another.



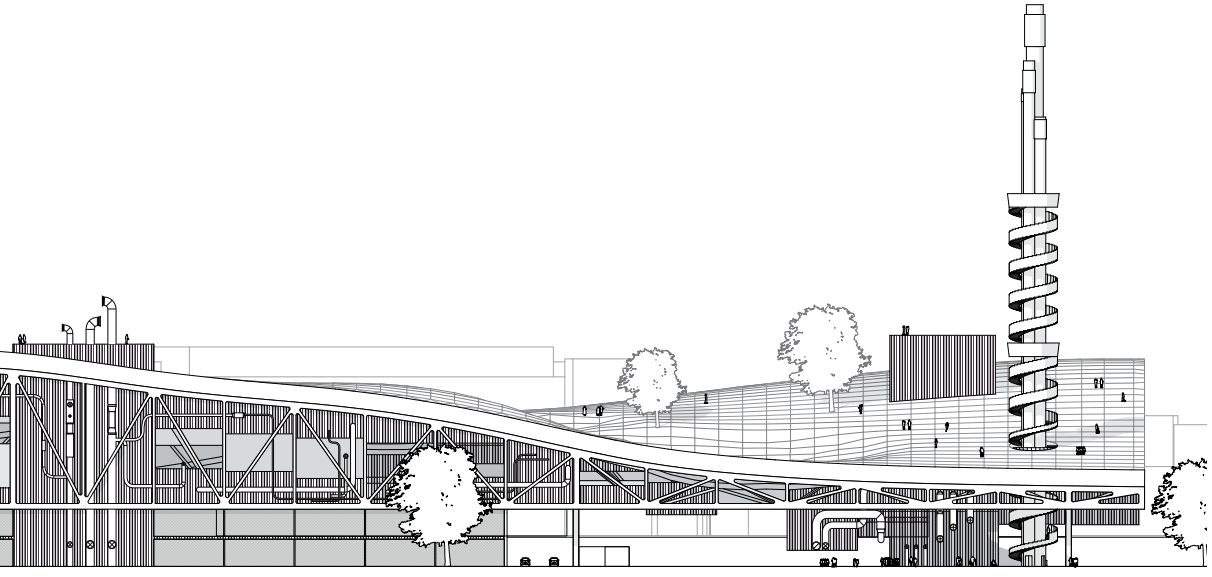


Treptower park

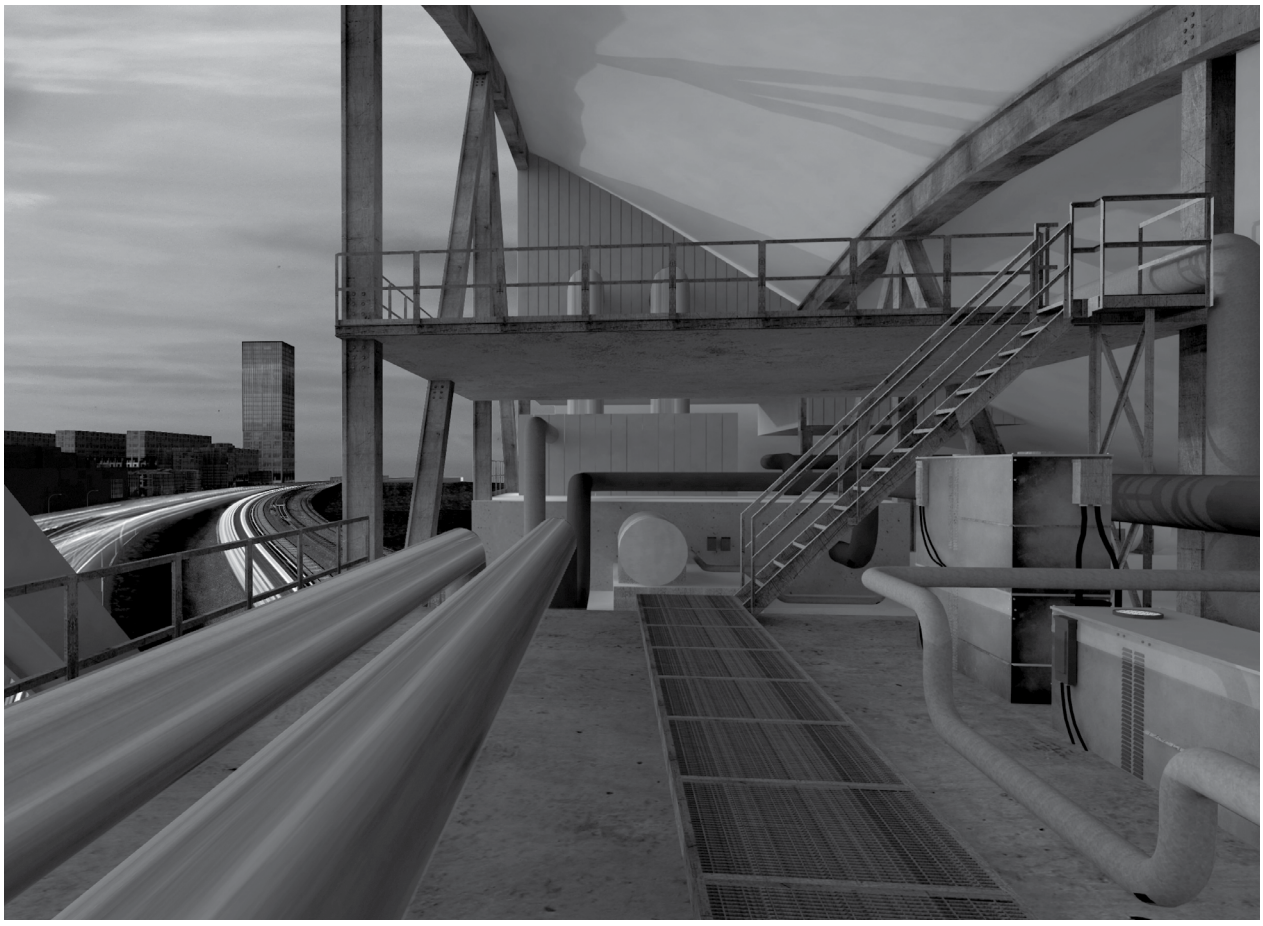




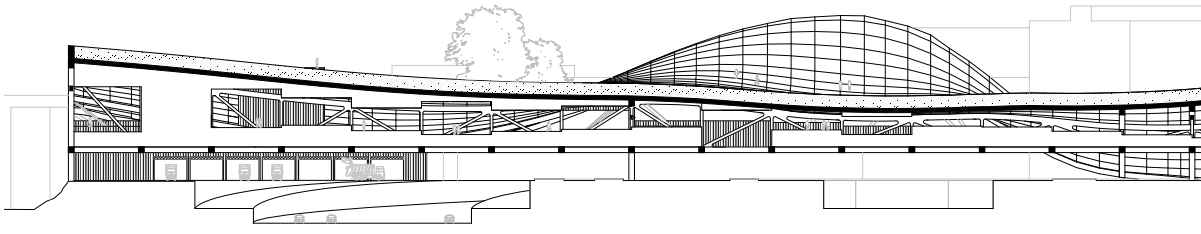
Cross section

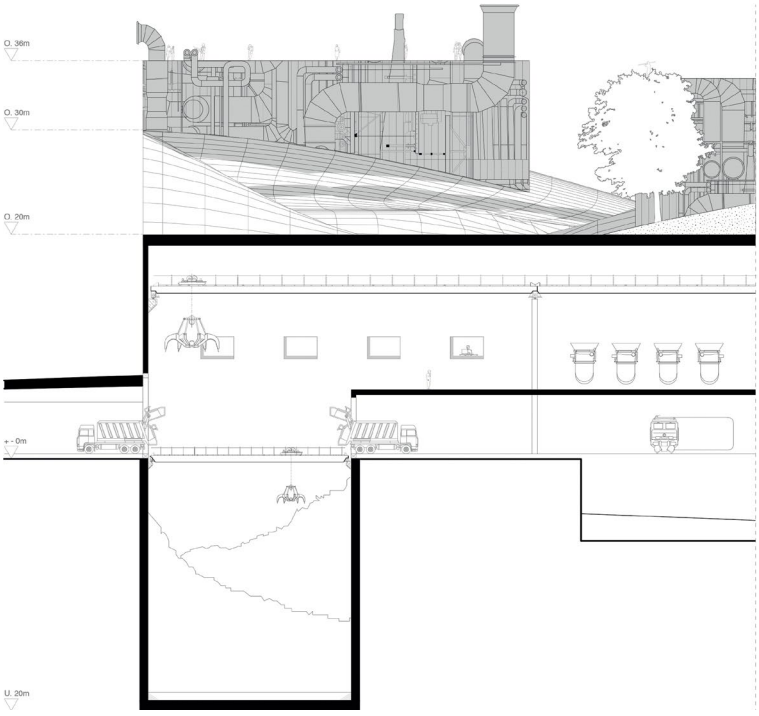


East elevation

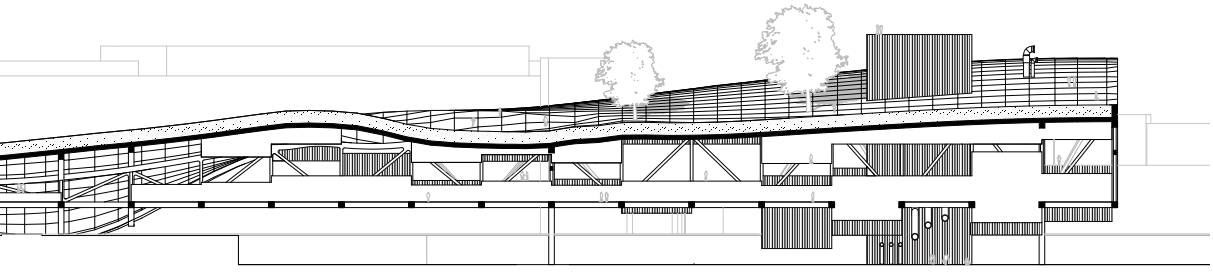


Boiler room

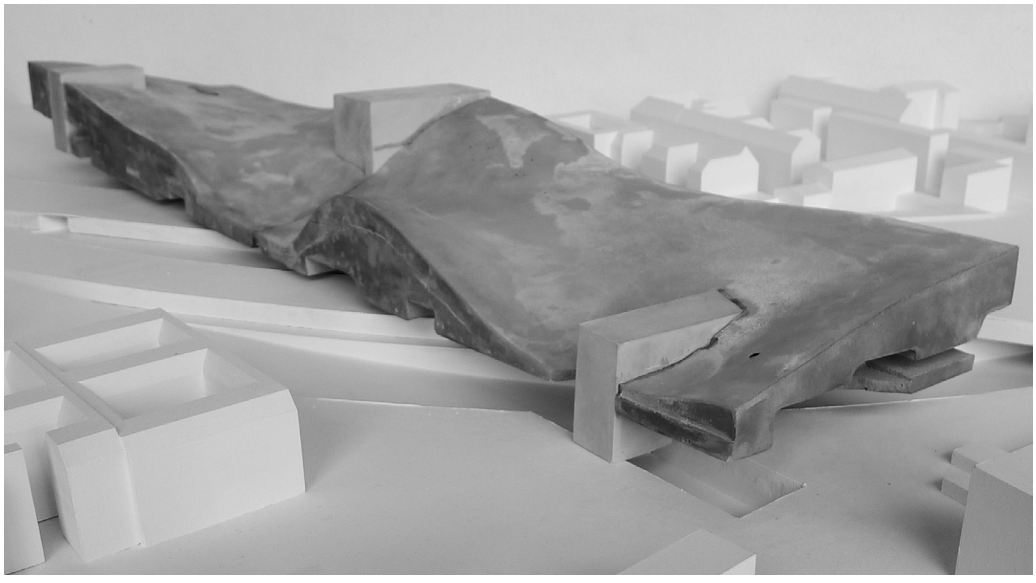




Cross section

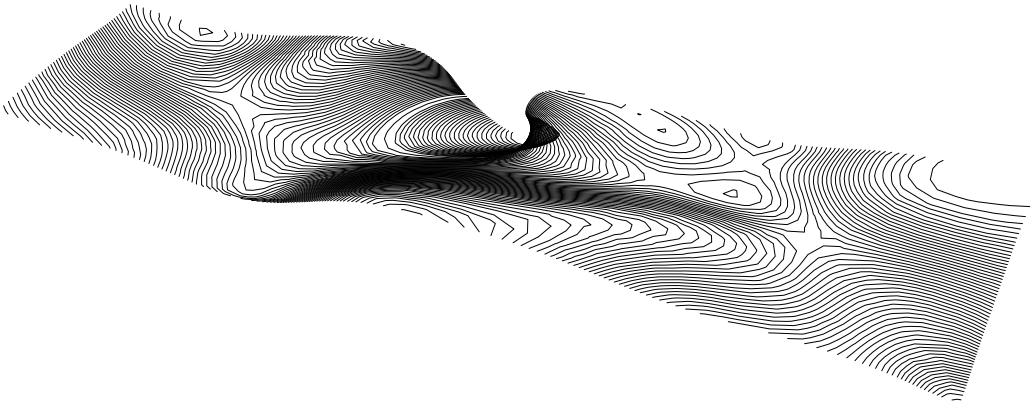


Longitudinal section



Model

Artificial landscape



Landscape modelling

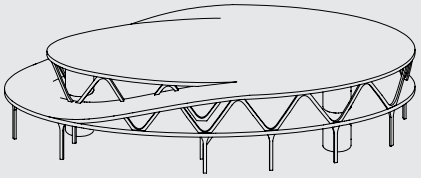

PM04
Einbahnstraße
TR·12ERS
VULVA
FUCK GRAFFITI


SKYTEC
Am Treptower

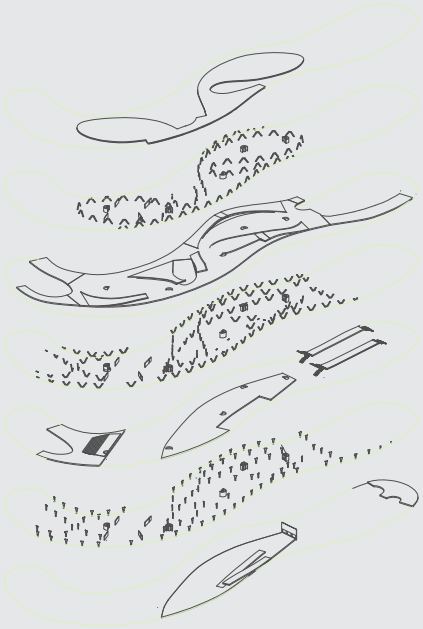
Tesla Center

—

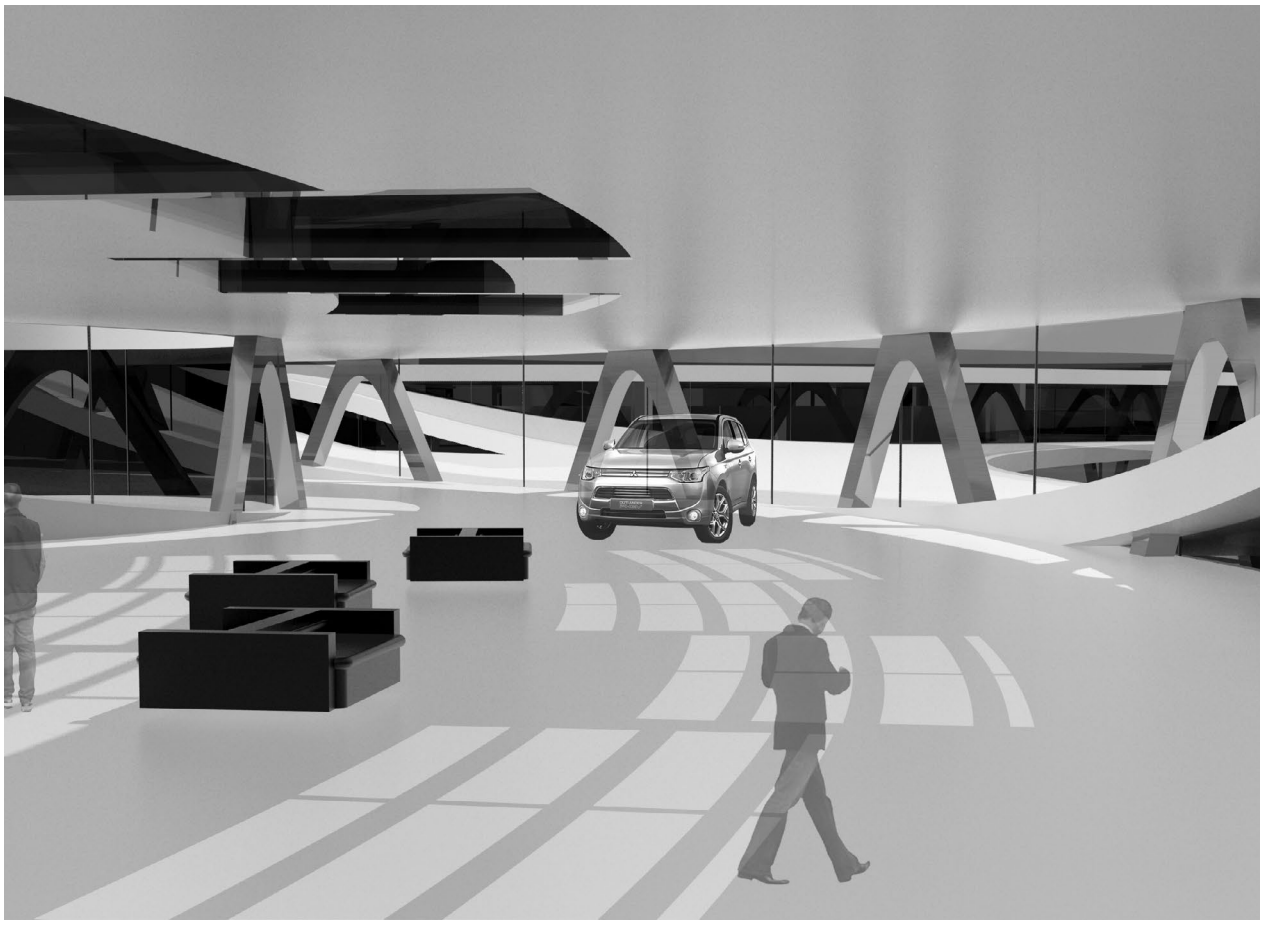
Lauréne Cendrey
Dora Ivanova
Olivia Berman
Pinar Tatlikazan



The PLACEMAKER is programmed with a multipurpose showroom for electrical cars. It aim at increasing public interest in sustainable mobility. The building adapts the local highway and railway conditions and integrates their flow of movement. The drive out from the highway and the integrated train station attract people coming by car and train, while big flat ramps welcome pedestrians and connect the parks at both ends. The concept of winding ramps is derived from a series of porosity studies. The construction of the bridge is based on a half-timbering system. It is carried by a system of pillars. The building offers parking lots on the ground floor as well as service and supplies for rechargeable electrical cars on the first floor. A big auditorium and library for educational purposes are situated on the main floor, where visitors can explore the showroom or have lunch in the restaurant.

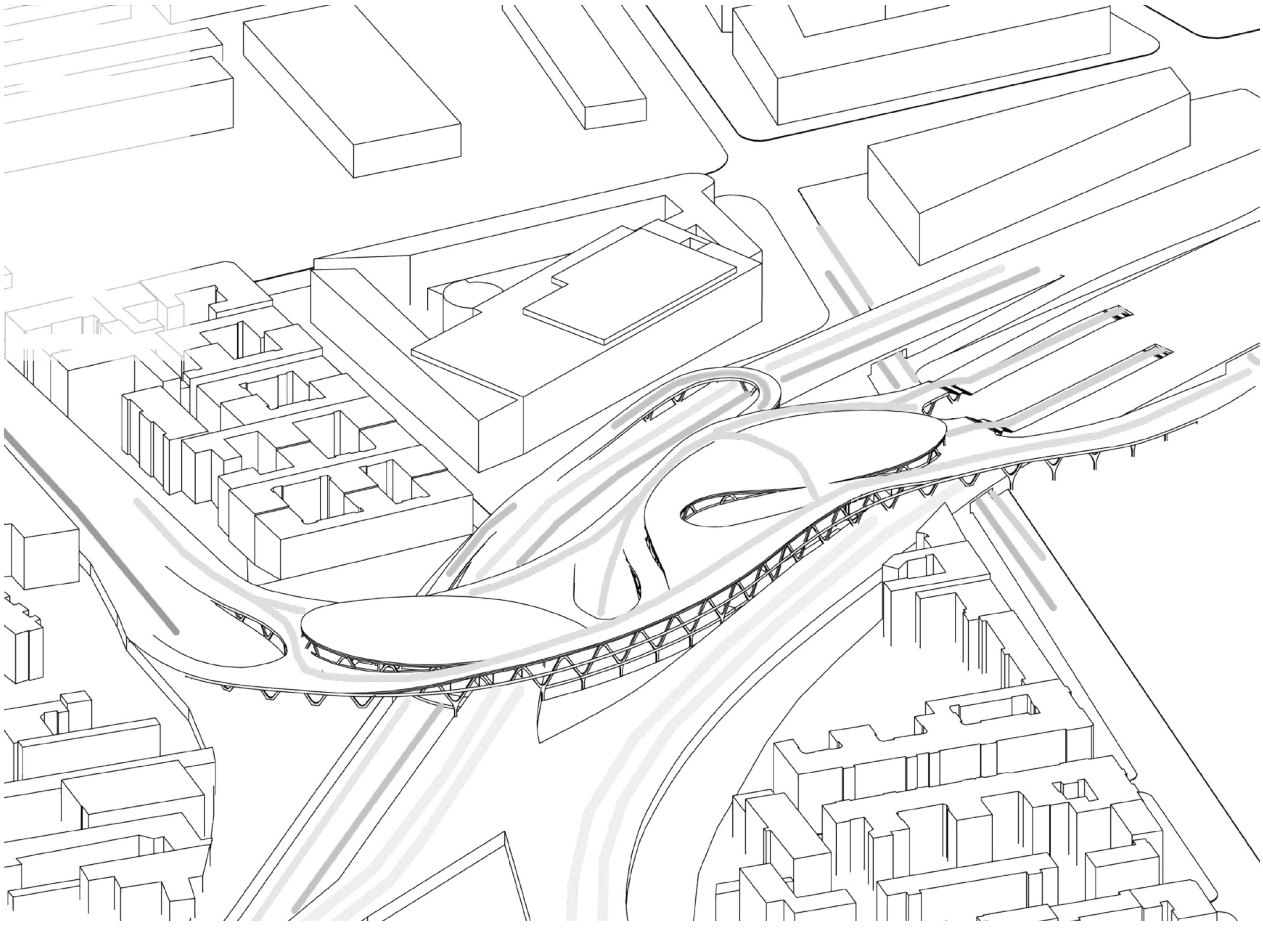



Treptower Park
Görlitzer Park



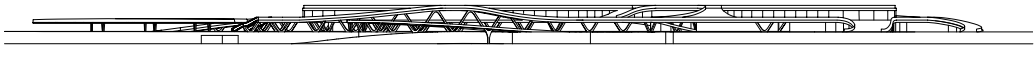
Exhibition space

Model

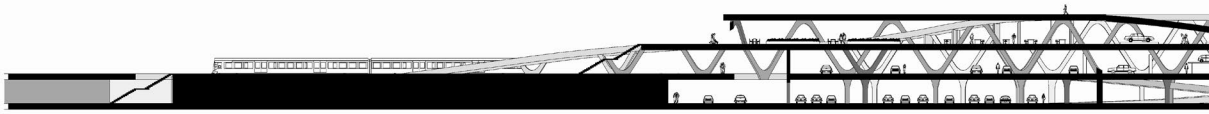


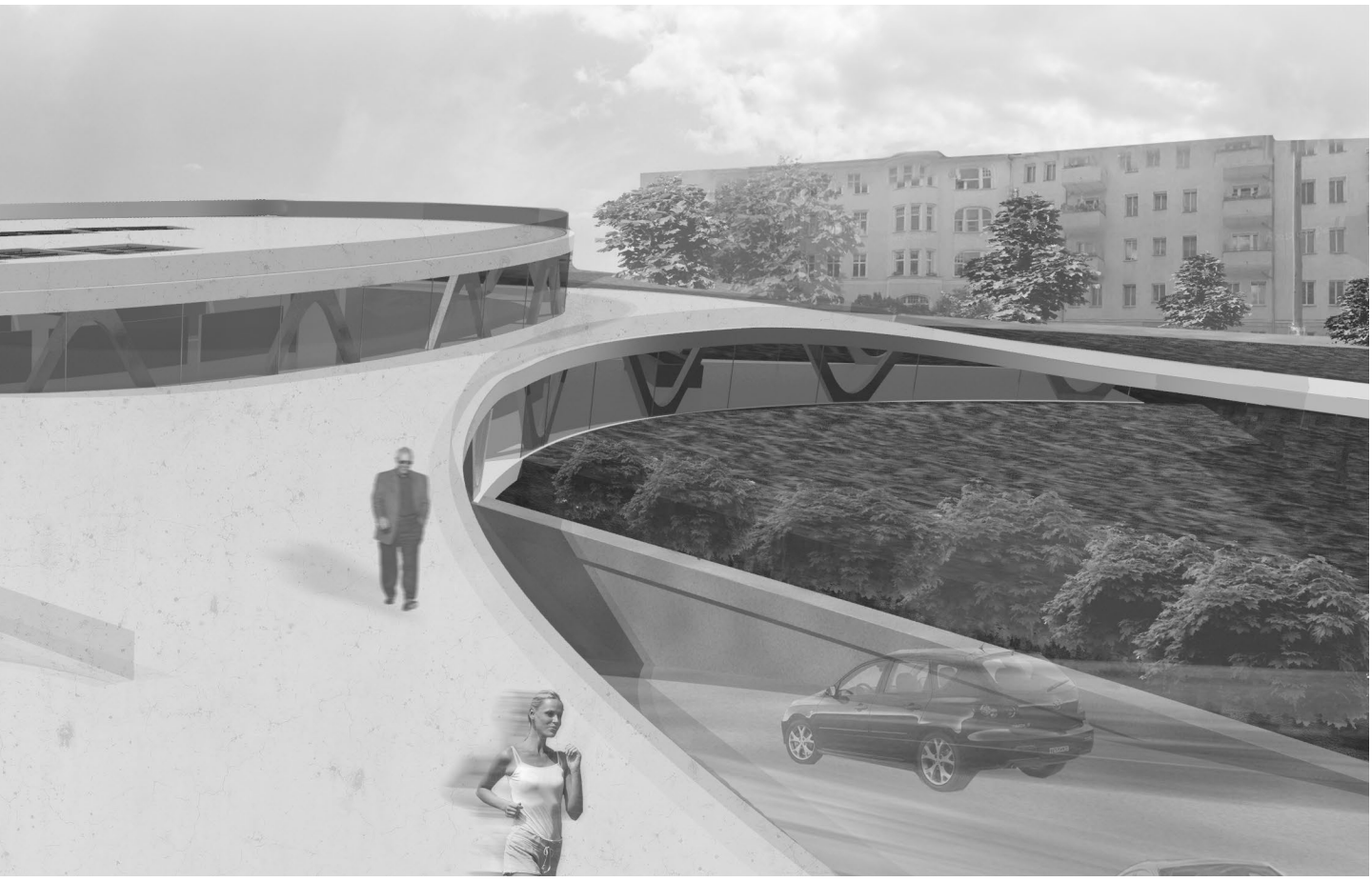
Urban trajectories

East elevation

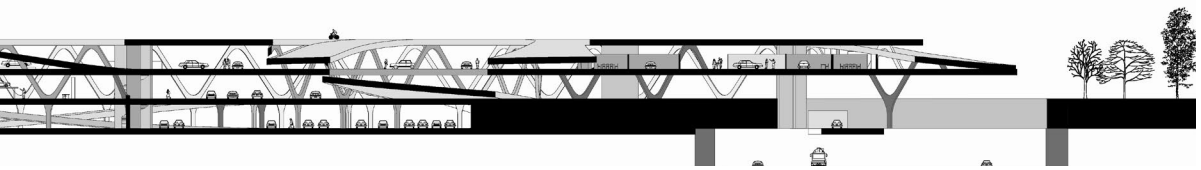


West elevation





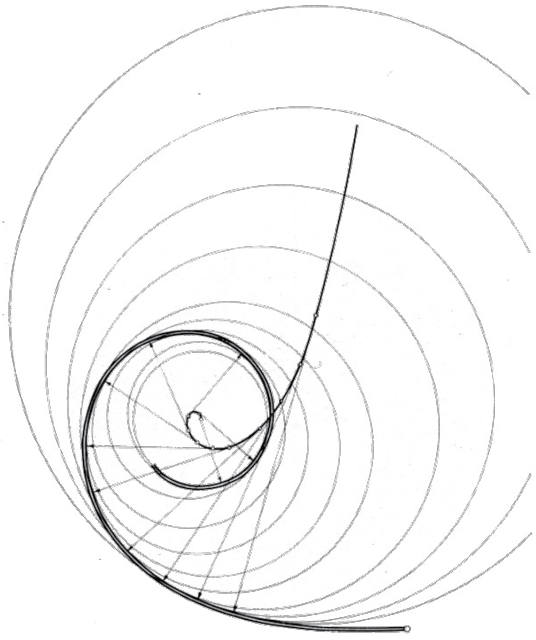
Rooftop terrace



Longitudinal section

The Engineer's Beauty

Jörg Leeser



Once there were engineers, well-dressed men of conviction. They were on a quest to better the world, regardless of anything but the demands of the new born modern man. With breathtaking speed they urbanized vast strips of land, empty in their eyes. Untouched nature, historic cities, farmland, it was their playground to be filled with inventiveness.

In their conception of modern man suburbanization and mobility was equally important as the industrious production of power, cars, consumer goods, chemicals, steel or aluminum. Anything else was not important. This modern man was a busy man, in need of rest after work amidst his caring family. His spare time was filled with numerous leisure activities, consuming goods and driving his car to distant destinations. It all came together into a well-maintained mechanism of controlled living conditions.

The sleek technocrat applied science to overcome obstacles along the path of progress. He knew what he was doing, he belonged to the well educated few. They not only knew math, they knew philosophy and they knew elegance. Their ambitions were endless, they had rigor and they had guts. And they had an impaired field of vision. With growth as an oversized, almost religious dogma, collateral damage was not an issue. There would be a mathematical solution for every problem.

Freeways

Freeways, grade-separated roads without intersections and property access, were developed in the early 20th century not only to shorten travel time, but also to allow travellers the experience of natural pleasures in a scenic ride. It was no coincidence that freeways and parkways were developed in New York with Central Park as a surprisingly suitable model for transportation needs. For the design of the New York City Central Park in 1858 Frederick Law Olmsted, Beatrix Farrand and Calvert Vaux elaborated a system of grade separated roads, foot paths and riding courses, that intertwined elegantly with the landscape in knots of over- and underpasses. These were not only intended to improve efficiency, but to hide carriage traffic from strolling pedestrians and protect them from the danger of galloping horses.

Later, with the advent of the automobile this spatial layout was adopted to the parkway system. In 1908 the first parkway was built on Long

Jörg Leeser, born 1967 in Essen, studied architecture at the RWTH Aachen before undertaking his post-graduate studies at the Bartlett School of Architecture in London. In 2000, he and Anne-Julchen Bernhardt cofounded the architecture office BeL Associates. Since 2011, he is a professor at the Peter Behrens School of Architecture, Düsseldorf.

Island, with many to follow in the next years. Soon Autostradas were built in Italy and with the first Autobahn between Bonn and Cologne in 1932 Germany entered the era of the Athens' Charta even before the latter was proposed. The early parkways all blended the concept of landscape and transportation into a well-balanced equilibrium of artificial landscape and usage. Later the generic, blatant highway arose on the horizon long after World War II, a manifest of ignorance and single-mindedness.

Clothoids

Still the ultimate enemies of the fast travelling car remained: centripetal forces and even worse, sudden changes in lateral acceleration. In curves the speed of cars is limited. The friction of its tires battles the horizontal centripetal forces. Tires loose grip, the driver looses control and the car crashes. Even though automobile suspensions improved dramatically between 1908 and 1960, the laws of physics could not be defeated, until an old mathematical discovery was introduced to the discipline of road design. The mathematicians Bernoulli, Euler and Cornu between 1694 and 1874 independently discovered the clothoid, also called Cornu or Euler spiral. By the Mid 19th century this curve gained importance in civil engineering in the layout of railroad tracks in England. Due to increasing speeds of trains transitional curves became necessary to maintain high speeds in curves.

It was not before 1937 when L. Oerley introduced this principle to road construction. Inclining pavements were built early to fight centripetal forces, but only the Euler spiral finally solved the problem of sudden changes in lateral acceleration and guaranteed a smooth and safe exit and entry to freeways.

Finally in 1954 Lorenz, Kasper, Schürba published the ultimate reference book in road layout: " Die Klotoide als Trassierungselement." The development of automobile velocity on roads had come to a climax.

Lorenz, Kaspar and Schürba not only described mathematically correct formulas to avoid dangerous road layouts; they delivered an entire cosmology of high velocity roads and their relationship with their environment. The concept of beauty is as eloquently elaborated in their text as their methods of constructing transitional curves without computational means.

Mathematicians, engineers and architects could not have built the tantalizing worlds of mono-functional infrastructure architecture without powerbrokers and bureaucrats not only supporting but also challenging them.

The Technocrats

With Robert Moses as the Park Commissioner of New York City and later as Secretary of State of the State of New York the era of technocrats reached its early peek in the USA. Like no other he initiated and planned infrastructural projects of enormous dimensions, a network of parkways, bridges and public beaches that expanded the urbanization of New York City deep into its suburban surrounding. His famous quote "You got to break some eggs to make an omelet" also gave rise to a new critical understanding of urbanism and civic rights, led by Jane Jacobs.

In Germany Friedrich Tamms became Düsseldorf's Robert Moses. During National Socialism he was a member of Albert Speers planning staff, worked on the "Reichsautobahn" system and the planning of Berlin as the empire's capitol before he became chief executive of the Düsseldorf planning board after World War II. Being a technocrat and an architect by trade he shifted with ease from neo-classicism to modern architecture, turning the city of Düsseldorf, heavily struck by allied bombing, into a modern, mobility-driven city. While he gathered a group of friends from darker times around him he made sure, that the level of competence met only the highest standards. The group of bridges across the river Rhine he designed in collaboration with Fritz Leonardt is an impressive example of modern suspension bridges. The urban ensemble of Thyssen high-rise, Düsseldorf theater, the old Hofgarten Park and, last but not least, the "Tausenfüssler" fly-over still manifests "Wirtschaftswunder-Germany" in its heydays, even though the recent destruction of the fly-over and the addition of a Daniel Libeskind building have unfortunately not contributed positively to the situation.

While we look disdainfully at the technocrat's misbehavior today, we miss the magnificence he ruthlessly produced. In essence it is the sheer power of performance, something that functions so well, that is so well designed with no add-ons. Something that does not mean anything, that just exists and serves while it rules. Some of its beauty might stem from misunderstanding, some from ignorance. When for example the layout principles of high-speed roads meet dense city centers as if these were landscapes, the juxtaposition of both produces vague spaces of enormous potential. When something is brutally cut apart, impossible to stitch but a new condition altogether it is ready to be exploited. We need to consider infrastructural work as something to appropriate with other uses. Or just celebrate its monumentality.

Credits

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Students

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Boštjan Vuga, Andreas Ruby, Jörg Leeser

Guest Critics

Jessica Bridger, Jörg Leeser, Martin Rein-Cano, Roger Riewe, Andreas Ruby, David Ruic, Volker Schmid, Marina Stnakovic, Jörg Stollman

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